Apprenticeship Manitoba

Manitoba

Railway Car Technician (RCT)
Level 2

Rev. July 2011

Apprenticeship Manitoba

Railway Car Technician (RCT)

Unit: B4 Using Railway-Car Schematics, Blueprints and Other Technical Drawings

Level: Two

Duration: 35 hours

Theory: 14 hours

Practical: 21 hours

Overview:

This unit of offers intermediate level RCT apprentices opportunity to refine blueprint-use practical skills by tackling an instructor- provided array of technical drawings and associated reference materials with a focus on finding, deriving, and generating required information. As such, the unit enhances capabilities required across a broad spectrum of RCT trade-activity concerning such crucial, interrelated practices as practices work-planning, problem-solving, and technical communication.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Indentify, compare, and contrast the various types of technical drawings which RCTs use to complete work assignments.	**10%**
2. Describe/demonstrate procedures and sources (including service manuals/bulletins, parts manuals, work orders, etc.) for using schematic drawing to complete RCT work assignments, e.g., pictorial information in: levers/air-brake components as depicted on badge plates; equipment manuals.	**15%**
3. Describe/demonstrate procedures and sources for using blueprints to complete RCT work assignments, e.g., use of end-of-railcar blueprints to locate safety appliances and door-stops; architectural detail drawings; etc.	**15%**
4. Use a selection of instructor-provided, RCT-trade related schematic drawings and related materials to derive/generate information per assignment specifications.	**30%**
5. Use a selection of instructor-provided, railway-car blueprints and other related technical drawings to derive/generate information per assignment specifications.	**30%**

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Railway Car Technician (RCT)

Unit: C4 RCT Rigging and Materials-Handling Practices

Level: Two

Duration: 28 hours

Theory: 21 hours

Practical: 7 hours

Overview:

This unit of instruction provides opportunity for intermediate level apprentices to secure and manipulate a wide range of materials required in RCT trade activity. It is supplemented by program content in other units concerned with specific materials-handling assignments, as well as the use of cranes, boom trucks, and other hoisting equipment per applicable regulations.

Objectives and Content:		**Percent of Unit Mark (%)**
1.	**Describe standards, procedures, main contexts, and special hazards/precautions (including regulations) associated with RCT work-assignments requiring rigging and materials-handling proficiency.**	**15%**
2.	**Describe/demonstrate the tools, equipment, materials, and techniques required to perform the rigging and materials-handling practices of the RCT trade in general.**	**15%**
3.	**Describe/demonstrate rigging procedures required to complete particular railway-car projects as specified by the instructor.**	**15%**
4	**Describe/demonstrate materials-handling procedures required to complete particular railway-car projects as specified by the instructor.**	**15**
5	**Complete the RCT rigging and materials-handling skills demonstration per instructor specifications and grading-criteria.**	**25%**
6	**Describe/demonstrate the use of hand-signal per RCT-trade rigging and materials-handling requirements.**	**15%**

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Railway Car Technician (RCT)

Unit: D1 Railway-Car Truck Assemblies and Components

Level: Two

Duration: 28 hours

Theory: 21 hours

Practical: 7 hours

Overview:

This unit of instruction offers intermediate level training in the procedures required to measure, diagnose, and service railway-car underframe system components.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Identify/describe RCT work-requirements concerning truck assemblies and components in general as they pertain to the structure and function of railway-car underframe systems.	**10%**
2. Describe special hazards and precautions regarding RCT work-assignments to diagnose and service truck assemblies and components.	**15%**
3. Identify and describe truck component-related defects, with particular reference to use of prescribed gauges.	**25%**
4. Identify and describe wheel defects, including reference to wheel-identification markings.	**25%**
5. Complete the railway car truck assemblies and components demonstration project per instructor specifications, including detection of defects.	**25%**

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Railway Car Technician (RCT)

Unit: D2 Railway-Car Coupling-Systems and Draft Systems

Level: Two

Duration: 21 hours

Theory: 14 hours

Practical: 7 hours

Overview:

This unit of instruction offers intermediate level training in the procedures required to measure, diagnose, and service components of railway-car coupling systems and draft-systems.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Identify/describe RCT work-requirements concerning railway-car coupling and draft systems-units in general as these pertain to the structure/function of underframe systems.	**10%**
2. Describe special hazards/precautions regarding RCT work-assignments to diagnose and service railway-car coupling-units.	**25%**
3. Describe RCT-trade standards and procedures for inspecting, assembling/disassembling, and reconditioning railway-car couplers, yokes, draft-gears and associated components as specified by the instructor.	**25%**
4. Describe RCT-trade standards and procedures for selecting and interpreting Procedural Sheets per general and specific job-assignment requirements.	**20%**
5. Complete the assignment, including use of procedural sheet, to derive and apply information per instructor's specifications, with particular reference to replacement to a sprung gear.	**20%**

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Railway Car Technician (RCT)

Unit: D3 Railway-Car Cushion Units

Level: Two

Duration: 14 hours

Theory: 7 hours

Practical: 7 hours

Overview:

This unit of instruction offers intermediate level training in the procedures required to measure, diagnose, and service railway-car cushion units.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Identify/describe RCT work-requirements concerning RCT cushion units in general as these pertain to the structure/function of underframe systems.	**10%**
2. Describe special hazards/precautions, inkling Original Equipment Manufacturer (OEM) manual requirements, regarding RCT work-assignments to diagnose and service railway-car cushion units, with special reference to gearing.	**20%**
3. Describe/demonstrate RCT-trade standards and procedures, including inspection protocols, for diagnosing and servicing centre-of-car cushion units in particular as specified by the instructor.	**25%**
4. Describe/demonstrate RCT-trade standards and procedures, including inspection protocols, for diagnosing and servicing end-of-car cushion units in particular as specified by the instructor.	**25%**
5. Complete the railway car cushion-unit competencies demonstration project, with particular reference to the OEM manual, and to the selection/practical use of appropriate pressure gauges.	**20%**

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Railway Car Technician (RCT)

Unit: D4 Railway Car Structural-Underframe Components

Level: Two

Duration: 35 hours

Theory: 28 hours

Practical: 7 hours

Overview:

This unit of instruction offers intermediate level training in the procedures required to measure, diagnose, and service railway-car structural underframe components.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Identify/describe RCT work-requirements concerning railway car structural-underframe components.	**15%**
2. Describe special hazards/precautions regarding RCT work-assignments to diagnose and service railway-car structural-underframe components.	**10%**
3. Describe RCT-trade standards and procedures, including use of instructor-provided excepts from specific technical resources, for diagnosing and servicing railway-car chassis/chassis-components.	**25%**
4. Describe RCT-trade standards and procedures, including AAR specifications and tolerances, for diagnosing and servicing centre-sills.	**25%**
5. Complete the railway car structural-underframe competencies demonstration project, with particular reference to identifying and applying inspection protocols and prescribed tolerances per instructor-provided specifications.	**25%**

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Railway Car Technician (RCT)

Unit: E2 Railway-Car Hand-Brakes

Level: Two

Duration: 7 hours

Theory: 5 hours

Practical: 2 hours

Overview:

This unit of instruction offers intermediate level training in the procedures required to measure, diagnose, and service railway-car hand brakes.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Identify/describe RCT work-requirements concerning hand-brakes as these pertain to the broader structure/function of railway-car air-brake brake systems/components.	**10%**
2. Describe special hazards/precautions, re: RCT work-assignments to diagnose and service railway-car hand-brake systems/components.	**10%**
3. Describe/demonstrate RCT-trade standards (e.g., re alignments) and procedures for diagnosing railway-car handbrake systems/ components.	**10%**
4. Describe/demonstrate RCT-trade standards and procedures, including distinction between types of hand-brake system, for servicing railway-car handbrake systems/ components.	**30%**
5 Describe/demonstrate AAR standards and procedures, including application of manufacturer specifications, for servicing such air-brake system consumables as shoes, clevises, pins, chains, rods, etc.	**25%**
6. Complete the railway car handbrake competencies demonstration project, with particular reference to performing the hand-brake test.	**15%**

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Railway Car Technician (RCT)

Unit: F1 Open-Top Freightcars

Level: Two

Duration: 28 hours

Theory: 28 hours

Practical: 0 hours

Overview:

This unit of instruction offer intermediate level training in the procedures required to diagnose, and service open-top freightcars.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Identify/describe RCT work-requirements concerning open-top freightcars as these compare/contrast with the diagnosis and servicing of other types of railway-car rolling stock.	**10%**
2. Describe special hazards/precautions re: RCT work-assignments to diagnose and servicing open-top freightcars.	**15%**
3. Describe/RCT-trade standards and procedures for diagnosing/ servicing gondola cars, with particular reference to inspection criteria, use of prescribed gauges, and protocols for removal, replacement, and repair of components per instructor specifications.	**25%**
4. Describe/ RCT-trade standards and procedures for diagnosing/ servicing bulkhead/flat-cars, with particular reference to inspection criteria, use of prescribed gauges, and protocols for removal, replacement, and components per instructor specifications.	**25%**
5. Describe RCT-trade standards and procedures for diagnosing/ servicing intermodal freightcars, with particular reference to inspection criteria, use of prescribed gauges, and protocols for removal, replacement, and repair of car components per instructor specifications.	**25%**

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Apprenticeship Manitoba

Railway Car Technician (RCT)

Unit: F2 Enclosed Freightcars

Level: Two

Duration: 35 hours

Theory: 35 hours

Practical: 0 hours

Overview:

This unit of instruction offers intermediate level training in the procedures required to diagnose, and service enclosed freightcars.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Identify/describe RCT work-requirements concerning enclosed freightcars as these compare/contrast with the diagnosis and servicing of other types of railway-car rolling stock.	**10%**
2. Describe special hazards/precautions re: RCT work-assignments to diagnose and service enclosed freightcars.	**15%**
3. Describe RCT-trade standards and procedures for diagnosing/ servicing hopper cars, with particular reference to inspection criteria, use of prescribed gauges, and removal/replacement/repair of components per instructor specifications.	**20%**
4. Describe RCT-trade standards and procedures for diagnosing/ servicing boxcars, with particular reference to inspection criteria, use of prescribed gauges, and protocols for removal, replacement, and components per instructor specifications.	**25%**
5. Describe/ RCT-trade standards and procedures for diagnosing/ servicing autorack-cars, with particular reference to inspection criteria, use of prescribed gauges, and protocols for removal, replacement, and repair of car components per instructor specifications.	**15%**
6. Describe/ RCT-trade standards and procedures for diagnosing/ servicing tanker-cars, with particular reference to inspection criteria, prescribed gauges, and protocols for removal, replacement, and components per instructor specifications.	**10%**
7. Describe RCT-trade standards and procedures for diagnosing/ servicing cabooses, with particular reference to inspection criteria, prescribed gauges, and removal/replacement/repair of components per instructor specifications.	**5%**

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Railway Car Technician (RCT)

Unit: F3 Passenger Cars I: Baggage, Coach, and Sleeper

Level: Two

Duration: 35 hours

Theory: 28 hours

Practical: 7 hours

Overview:

This unit is the first of two RCT technical training units that offer intermediate level instruction re: procedures required to diagnose and service railway-passenger cars in accordance with current industry standards.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Identify/describe RCT work-requirements concerning baggage, coach, and sleeper cars as these compare/contrast with the diagnosis and servicing of other types of railway-car rolling stock.	**10%**
2. Describe special hazards/precautions re: RCT work-assignments to diagnose and service these passenger cars.	**15%**
3. Describe/demonstrate RCT-trade standards and procedures for diagnosing/ servicing baggage-car, with particular reference to inspection criteria, use of prescribed gauges, and protocols for removal, replacement, and repair of components per instructor specifications.	**25%**
4. Describe/demonstrate RCT-trade standards and procedures for diagnosing/ servicing coach-cars, with particular reference to inspection criteria, use of prescribed gauges, and protocols for removal, replacement, and components per instructor specifications.	**25%**
5. Describe/demonstrate RCT-trade standards and procedures for diagnosing/ servicing sleeper-cars, with particular reference to inspection criteria, use of prescribed gauges, and protocols for removal, replacement, and repair of car components per instructor specifications.	**25%**

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Railway Car Technician (RCT)

Unit: F4 Passenger Cars II: Diner and Domed

Level: Two

Duration: 28 hours

Theory: 14 hours

Practical: 14 hours

Overview:

This unit is the second of two RCT technical training units that offer intermediate level instruction re: procedures required to diagnose and service railway-passenger cars in accordance with current industry standards.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Identify/describe RCT work-requirements concerning domed- and diner-type passenger cars as these compare/contrast with the diagnosis and servicing of other types of railway-car rolling stock.	**10%**
2. Describe special hazards/precautions re: RCT work-assignments to diagnose and service these passenger cars.	**15%**
3. Describe/demonstrate RCT-trade standards and procedures for diagnosing/ servicing domed-type passenger cars, with particular reference to inspection criteria, use of prescribed gauges, and protocols for removal, replacement, and repair of components per instructor specifications.	**25%**
4. Describe/demonstrate RCT-trade standards and procedures for diagnosing/ servicing doner-type passenger cars, with particular reference to inspection criteria, use of prescribed gauges, and protocols for removal, replacement, and components per instructor specifications.	**30%**
6. Complete the passenger-car competencies demonstration project, with particular reference to RCT-trade practices for removal, repair, and/or replacement procedures as specified by the instructor.	**20%**

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Apprenticeship Manitoba

Railway Car Technician (RCT)

Unit: G1 Railway-Car Plumbing Systems and Components

Level: Two

Duration: 21 hours

Theory: 7 hours

Practical: 14 hours

Overview:

This unit of instruction offers intermediate level training in the procedures required to measure, diagnose, and service railway-car plumbing systems and components.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Identify/describe RCT work-requirements concerning railway-car plumbing systems as these pertain to the structure/function of railway-car technology more generally.	**10%**
2. Describe special hazards/precautions, including mandated testing/inspection protocols, re: RCT work-assignments to diagnose and service railway-car plumbing systems/components.	**10%**
3. Describe/demonstrate RCT-trade standards and procedures, including special tests and measurements, for diagnosing and servicing plumbing-system pumps, hoses, tanks, and related components, with special reference to toilet and water-raising systems.wai.	**55%**
4. Complete the RCT plumbing-system competencies demonstration project, with particular reference to demonstrating such procedures as air/water-pipefitting, filtration, sterilization, flushing, and the troubleshooting of electric/pneumatic valves and side valves.	**25%**

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