



**SCNC**  
**SKILLS CANADA**  
**NATIONAL**  
**COMPETITION**



**OCMT**  
**OLYMPIADES**  
**CANADIENNES**  
**DES MÉTIERS**  
**ET DES**  
**TECHNOLOGIES**



**SkillsCompétences**  
**Canada**  
Halifax2019

CONTEST DESCRIPTION / DESCRIPTION DE CONCOURS

# **HEAVY EQUIPMENT TECHNOLOGY**

## **TECHNOLOGIE DE MACHINERIE LOURDE**

POST- SECONDARY / NIVEAU POSTSECONDAIRE



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## **1 THE ESSENTIAL SKILLS FOR CAREERS IN THE SKILLED TRADES AND TECHNOLOGY**

SCC is currently working with Employment and Social Development Canada (ESDC) in order to bring awareness to the importance of Essential Skills that are absolutely crucial for success in the workforce. Part of this ongoing initiative requires the integration and identification of Essential Skills in contest descriptions, projects, and project documents. The next phase and very important aspect of our Essential Skills (ES) initiative is to provide an ES report card to each competitor at the Skills Canada National Competition. The purpose of the ES report card is to inform the competitor about their current level of essential skills based on their competition scores. With this knowledge, the competitor will be made aware which essential skill may require improvement. Full implementation is expected in the next Skills Canada National Competition.

The following 9 skills have been identified and validated as key essential skills for the workplace in the legend below:

<sup>1</sup>Numeracy, <sup>2</sup>Oral Communication, <sup>3</sup>Working with Others, <sup>4</sup>Continuous Learning, <sup>5</sup>Reading Text, <sup>6</sup>Writing, <sup>7</sup>Thinking, <sup>8</sup>Document Use, <sup>9</sup>Digital

These essential skills have been identified within your Contest Description. The top three Essential Skills for your area of competition have been identified on your Project and all other supporting project documents.

## **2 CONTEST INTRODUCTION**

### **2.1 Description of the associated work role(s) or occupation(s).**

<http://skillscompetencescanada.com/en/careers/transportation/heavy-equipment-service/>

### **2.2 Purpose of the Challenge.**

Provide competitors with an opportunity to display their skills, knowledge, and professionalism as they safely and efficiently diagnose, repair, and maintain any part of the power train, including its control systems, in mobile and stationary industrial equipment.

### **2.3 Duration of contest.**

12 hours

## 2.4 Skills and Knowledge to be tested.

Use hand, power, and diagnostic tools to safely and competently carry out repairs according to manufacturer's specifications.<sup>7</sup>

Read and understand work orders<sup>5</sup>, interpret technical manuals<sup>8</sup>, and keep service records<sup>8</sup>.

*Essential Skills – <sup>5</sup>Reading Text, <sup>7</sup>Thinking (critical thinking, problem solving), <sup>8</sup>Document Use*

## 3 CONTEST DESCRIPTION

### 3.1 List of documents produced and timeline for when competitors have access to the documents.

DOCUMENT	DATE OF DISTRIBUTION VIA WEBSITE
Test Project	Janvier 2019

### 3.2 Tasks that may be performed during the contest

Competitors will complete practical tasks in the following categories relating to on-road, off-road, mobile, and stationary heavy equipment. The tasks are designed to evaluate the competitor's ability to safely and efficiently maintain, diagnose, and repair heavy equipment (on-road and off-road, mobile and stationary).

Engine Systems	2 hours
Electrical Systems	2 hours
Hydraulic Systems	2 hours
Drive-Train Systems	2 hours
Steering, Braking and Undercarriage Systems	2 hours
Work Place Practices	2 hours

## 4 EQUIPMENT, MATERIAL, CLOTHING

### 4.1 Equipment and material provided by Skills/Compétences Canada.

Below are the manufactures that may be used along with the service information software:

- Caterpillar – software (Service Information System)
  - Undercarriage measuring tool kit.
- Volvo – Vcads, Tech Tool
- John Deere – software (Service Advisor)
- Detroit – software (DiagnosticLink)
- Cummins – software (Insite)
- Eaton Roadranger (Inforanger)
- Meritor – software (Meritor Service Point)

- Allison – software (Universal Allison DOC)
- Fluke
  - Digital multimeter
  - Clamp meter (amperage) Test lead set
- Mac Tools
  - 15pc 3/4" drive imperial socket set
  - Torch kit
  - Laser Infrared Temperature Gun
  - 25 ton press V-blocks
  - 2 ton Folding Engine crane
  - 6 pc File Set
  - 19pc Punch Set
  - 3 x 10' retractable test leads with magnet
  - 3/8 Drive torque Wrench
  - Rolling cabinet tool box
  - Cordless light
  - Magnetic parts tray
  - Tape measure
  - Stepped feeler gauge (Imperial)
  - 3/8" drive socket driver hex set Imperial
  - 3/8" drive socket driver hex set metric
  - 3/8" drive torque wrench
  - 3/8" drive imperial/metric socket kit/ratchet/extensions
  - 1/2" drive ratchet
  - 1/2" extensions
  - 1/2" drive imperial socket set
  - 1/2" drive metric socket set
  - 1/2" drive torque wrench
  - 18pc Imperial wrench set
  - 19pc Metric wrench set
  - 12" Adjustable wrench
  - 3pc Lady foot pry bars
  - 8pc Screw driver set
  - Dead blow hammer
  - Plier set
  - Magnetic and Mechanical retrieval tool
  - 2 1/4' Inspection mirror
  - Creeper
  - Straight Edge, Precision, 24"
  - 26" 3/4" drive ratchet
  - 3/4" drive torque wrench
  - 4.5gal Drain pan
  - 16oz Oil can
  - Battery charger 12VDC

- Electronic battery tester 12VDC
- Test light
- Scream'n Continuity tester
- 1/2" drive electric impact gun
- Wire stripper pliers
- 29pc Drill bit set Sizes include 1/16" to 1/2", 1/64" increments
- Broken Bolt Extractor set –
- Stanley/Dewalt
  - 3/8" Cordless Drills

#### **4.2 Equipment and material provided by the competitor.**

- Competitor must bring:
  - Pencils and pens,
  - Flashlight
  - Multimeter (optional)
  - No other tools or toolbox is required by the competitor

COMPETITORS WILL BE REQUIRED TO USE THE MATERIAL AND EQUIPMENT PROVIDED BY SCC. ALL OTHER MATERIAL AND EQUIPMENT WILL BE REMOVED FROM THE SKILL AREA.

#### **4.3 Required clothing provided by the competitor.**

- Competitors must wear pants and a shirt plus either coveralls or a shopcoat. All must be clean and in good condition. Clothing must not be loose-fitting and must not have drawstrings or dangling pieces.

### **5 SAFETY REQUIREMENTS**

#### **5.1 Safety workshop**

Upon arrival at the Skill area, Competitors will participate in a Safety workshop and they will be expected to work and maintain a safe working area during the competition. Any Competitor breaking any health, safety and environmental rules, may be required to undertake a second safety workshop, this will not affect the Competitor's competition time.

#### **5.2 Personal protective equipment (PPE) provided by Skills/Compétences Canada**

- Mechanics gloves
- Face shield
- Nitrile gloves
- Safety glasses (clear)

#### **5.3 Personal Protective Equipment (PPE) provided by the competitor.**

- CSA-approved safety footwear
- CSA-approved safety eyewear (clear lenses)



- Hearing protection (ear plugs or ear muffs)

## 6 ASSESSMENT

### 6.1 Point breakdown

POINT BREAKDOWN
Use of safety equipment and safe and clean workspace
Use and interpretation of service manuals & schematic diagrams
Logical order of repair
Proper use of tools
Precise adjustment of components
Accurate measurements
Superior Workmanship
Identification of faults, codes, or components

## 7 CONTEST SPECIFIC RULES

Contest specific rules cannot contradict or take priority over the Competition Rules. They do provide specific details and clarity in areas that may vary from contest to contest. Any additional contest rules will be reviewed during competitor orientation.

TOPIC/TASK	CONTEST SPECIFIC RULE
Safety	<ul style="list-style-type: none"> <li>• Competitors must not wear jewellery (rings, bracelets, watches, necklaces, pins), ties, lanyards, ID badges, or anything attached to them or dangling from them that might get caught in a piece of moving equipment</li> <li>• Long hair must be tied up or tied back and tucked away down the back of the shirt so none is dangling, for protection from moving equipment</li> <li>• Consistently and diligently follow the best procedures to protect health and safety in the working environment</li> <li>• Use appropriate personal protective equipment: Individuals must wear safety footwear and eye protection with side shields, and must wear ear protection, respiratory protection, and either barrier gloves or fitted mechanic's gloves, as needed</li> <li>• Select and handle appropriate substances, materials, tools, and equipment safely and in compliance with manufacturers' instructions</li> <li>• Dispose of substances and materials safely and sustainably</li> </ul>

	<ul style="list-style-type: none"> <li>• Predict and eliminate all risks related to required activities</li> <li>• Prepare and maintain an orderly workspace with regard to health and safety</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• No cell phones, camera, video recorders, music playing devices, and earphones</li> </ul>

## 8 ADDITIONAL INFORMATION

### 8.1 Interpreter

If a competitor requires the help of an interpreter once onsite during the competition, the Skills/Compétences Canada Provincial/Territorial offices must advise Skills/Compétences Canada National Secretariat a minimum of 1 month prior to the competition or this service might not be guaranteed.

### 8.2 Ties

- Tiebreaker #1: In the event of a tie, the competitor with the highest score in the Safety criteria will be declared the winner.
- Tiebreaker #2: If a tie still remains, the competitor with the highest score in the Superior Workmanship criteria will be declared the winner.
- Tiebreaker #3: If a third tie occurs, the competitor with the highest score in the “Accurate Measurements” criteria will be declared the winner.

### 8.3 Test Project change at the Competition

Where the Test Project has been circulated to Competitors in advance, NTC shall change a maximum of 30% of the work content. Please refer to the Competition Rules.

### 8.4 Competition rules

Refer to the [competition rules](#) of the Skills Canada National Competition which can be found on our website.



## 9 NATIONAL TECHNICAL COMMITTEE MEMBERS

Member Organization	Name
Yukon	Doug McRae
British Columbia	Brad Holcik
Alberta - Chair	Bobby Haraba
Manitoba	Bryan Neufeld
Ontario – Co-Chair	Angelo Spano
Québec	Victor Faria
New Brunswick	Joey St-Amand
Nova Scotia	Gerry Brymer
Newfoundland and Labrador	Kent Hulan

Contact the Skills/Compétences Canada national secretariat for any questions or concerns: Nathalie Maisonneuve ([nathaliem@skillscanada.com](mailto:nathaliem@skillscanada.com)).