



CONTEST DESCRIPTION

Heavy Vehicle Technology

TEAM CANADA

Table of Contents

1	THE SKILLS FOR SUCCESS FOR CAREERS IN THE SKILLED TRADES AND TECHNOLOGY	2
2	CONTEST INTRODUCTION	2
3	CONTEST DESCRIPTION	3
4	EQUIPMENT, MATERIAL, CLOTHING	6
5	HEALTH AND SAFETY.....	7
6	ASSESSMENT	8
7	CONTEST SPECIFIC RULES	8
8	ADDITIONAL INFORMATION.....	9
9	TEAM CANADA EXPERT	10

1 THE SKILLS FOR SUCCESS FOR CAREERS IN THE SKILLED TRADES AND TECHNOLOGY

In response to the evolving labour market and changing skill needs, the Government of Canada has launched the new Skills for Success (former Essential Skills) model defining nine key skills needed by Canadians to participate in work, in education and training, and in modern society more broadly. SCC is currently working with Employment and Social Development Canada (ESDC) to bring awareness of the importance of these skills that are absolutely crucial for success in Trade and Technology careers. Part of this ongoing initiative requires the integration and identification of the Skills for Success in contest descriptions, projects, and project documents. The next phase and very important aspect of our Skills for Success (SfS) initiative is to provide a Skills Report Card to each competitor at the Skills Canada National Competition. The purpose of the report card is to inform the competitor about their current level of nine identified Skills for Success based on their competition scores. With this knowledge, the competitor will be made aware which 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 skills for success for the workplace in the legend below:

¹Numeracy, ²Communication, ³Collaboration, ⁴Adaptability, ⁵Readingt, ⁶Writing, ⁷Problem Solving, ⁸Creativity and Innovation, ⁹Digital

These Skills for Success have been identified in section 2.4 and/or 3.2 of your Contest Description and if applicable, in your Project and supporting documents.

2 CONTEST INTRODUCTION

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

https://www.skillscompetencescanada.com/en/skill_area/heavy-vehicle-technology/

2.2 Purpose of the Challenge

To demonstrate skills and knowledge in diagnosing, adjusting and repairing off road equipment or components following manufacturers' recommended procedures.

To perform work in a safe and competent manner, inspect and test components and circuits. Repair or replace off road equipment components as required. Perform all phases of measurements in metric S.I. or Imperial standards.

2.3 Duration of contest

(To be determined)

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.⁷

Read and understand work orders⁵, interpret technical manuals⁵, and keep service records⁶.

Skills for Success – ⁵Reading, ⁶Writing, ⁷Problem solving

3 CONTEST DESCRIPTION

3.1 List of documents produced and timeline for when competitors have access to the documents on the Skills/Compétences Canada website

DOCUMENT	DATE OF DISTRIBUTION
Competition Documents	<ul style="list-style-type: none"> Will be posted as they are ready for distribution
Assessment Process	<ul style="list-style-type: none"> Will be posted when ready for distribution

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).

There are seven area subjects that can be used at this competition. Of the seven area's, only 6 will be used. 4 weighted at 16.70 and 2 at 16.60 % for a total of 100%

NOTE : Any of the seven skill area's can be used.

- **Diesel Engines:**

- Fault diagnostics and problem solving
- Inspection and testing
- Precision measuring
- Disassembly and assembly
- Interpreting manufacturer's documentation
- Adjustment and repair procedures

- Verifying repairs and procedures
- **Drive Train Systems:**
 - Diagnostics and problem-solving techniques using drive train test equipment
 - Inspection and testing following manufacturer's recommended diagnostic procedures
 - Analyzing mechanical / electrical, drive train performance problems
 - Disassembly, assembly and adjustment of drive train components
 - Precision measuring
 - Interpreting manufacturer's documentation for testing and repair of drive train systems
 - Adjustment, testing and repair procedures as outlined in manufacturer's documentation
 - Verifying drive train adjustments and repairs

Essential Skills - ⁵Reading Text, ⁷Thinking (critical thinking, problem solving), ⁸Document Use

- **Electrical/Electronics:**
 - Diagnostics and problem solving using diagnostic test equipment
 - Inspection and testing following manufacturer's diagnostic procedures
 - Analyzing mechanical and electrical/electronic performance problems
 - Disassembly and assembly of alternator and starters
 - Interpreting manufacturer's documentation for testing and repair
 - Adjustment testing and repair procedures as outlined in manufacturer's documentation
 - Verifying adjustments and repairs

Essential Skills - ⁵Reading Text, ⁷Thinking (critical thinking, problem solving), ⁸Document Use

- **Fluid Power Systems:**
 - Diagnostics and problem solving using hydraulic diagnostic test equipment
 - Inspection and testing following manufacturer's recommended diagnostic procedures
 - Analyzing mechanical, electrical/hydraulic performance problems
 - Disassembly and assembly of hydraulic components

- Precision measuring
- Interpreting manufacturer's documentation for testing and repair of hydraulic systems
- Adjustment testing and repair procedures as outlined in manufacturer's documentation
- Verifying hydraulic adjustments and repairs

Essential Skills - ⁵Reading Text, ⁷Thinking (critical thinking, problem solving), ⁸Document Use

- **Fuel Systems:**

- Fault Diagnostics and problem solving using diagnostic test equipment
- Inspection and testing following manufacturer's diagnostic procedures
- Analyzing mechanical and electronic performance problems
- Disassembly and assembly of fuel system components
- Interpreting manufacturer's documentation
- Adjustment testing and repair procedures
- Verifying repairs

Essential Skills - ⁵Reading Text, ⁷Thinking (critical thinking, problem solving), ⁸Document Use

- **Steering Suspension & Brake Systems:**

- Diagnostics and problem solving techniques on steering, suspension and brake systems
- Inspection and testing following manufacturer's recommended diagnostic procedures
- Disassembly, assembly and adjustment of steering, suspension and brake systems/ components
- Interpreting manufacturer's documentation for testing and repair of steering, suspension and brake systems
- Adjustment testing and repair procedures as outlined in manufacturer's documentation
- Verifying steering, suspension and brake system adjustments and repairs

Essential Skills - ⁵Reading Text, ⁷Thinking (critical thinking, problem solving), ⁸Document Use

- **Trades Practices:**

- Inspection and testing
- Drilling and tapping

- Precision measuring
- Disassembly and assembly
- Interpreting manufacturer's documentation
- Adjustment and repair procedures
- Verifying repairs and procedures

Essential Skills - ⁵Reading Text, ⁷Thinking (critical thinking, problem solving), ⁸Document Use

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) (CAT ET) Undercarriage measuring tool kit.
- Volvo – Process, Tech Tool
- Cummins – software (Insite)
- John Deere – software (Service Advisor)
- Detroit – software (DiagnosticLink)
- Eaton Roadranger (Inforanger)
- Meritor – software (Meritor Service Point)
- Allison – software (Universal Allison DOC)
- Fluke
- Digital multimeter
 - Clamp meter (amperage) Test lead set

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.

4.2 Equipment and material provided by the competitor

- Competitor must bring
 1. Pencils and pen's
 2. Flashlight
 3. Multimeter (Optional)
 4. No other tools or toolbox is required by the competitor

4.2.1 Toolboxes Guidelines.

Toolboxes are not permitted.

5 HEALTH AND SAFETY

5.1 Safety program

SCC has implemented a comprehensive safety program as health and safety is an integral part of our competitions. Our safety program includes guidelines and procedures to make the work environment in each skill area safer.

5.1.1 Safety manual

As part of our program a safety manual has been created in order to monitor and document health and safety within each skill area. It includes a definite plan of action designed to prevent accidents. The safety manual will be provided for every skill and these instructions must be followed and respected by all participants and officials at the SCNC.

5.1.2 Safety workshop

During orientation, 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 COVID-19 Protocol

The COVID-19 guidelines will be shared as soon as they are available.

The COVID-19 guidelines will be subject to change based on the BC COVID-19 guidelines in place at the time of the competition.

5.3 List of required personal protective equipment (PPE) provided by Skills/Compétences Canada

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

5.4 List of required personal protective equipment (PPE) provided by the competitor

- Competitors must wear pants and a shirt plus either coveralls or a shop coat. All must be clean and in good condition. Clothing must not be loose-fitting and must not have drawstrings or dangling pieces.
- CSA-approved safety footwear
- CSA-approved safety eyewear (clear lenses)

- Hearing protection (ear plugs or ear muffs)

Note: Contestants who do not have the required protective gear will not be allowed to participate in the contest

6 ASSESSMENT

6.1 Point Breakdown

TASKS	/100
Use of safety equipment and safe and clean workspace	15
Use and interpretation of service manuals & schematic diagrams	10
Logical order of repair	10
Proper use of tools	10
Precise adjustment of components	15
Accurate measurements	10
Superior Workmanship	15
Identification of faults, codes, or components	15

Note: This list is subject to change.

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 the competitor orientation.

TOPIC/TASK	CONTEST SPECIFIC RULE
Safety	<ul style="list-style-type: none"> • 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 • 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 • Consistently and diligently follow the best procedures to protect health and safety in the working environment • 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 • Select and handle appropriate substances, materials, tools, and equipment safely and in compliance with manufacturers' instructions • Dispose of substances and materials safely and sustainably • Predict and eliminate all risks related to required activities • Prepare and maintain an orderly workspace with regard to health and safety
Technology	<ul style="list-style-type: none"> • No cell phones, camera, video recorders, music playing devices, and earphones

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 TEAM CANADA EXPERT

Angelo Spano

Contact the Skills/Compétences Canada national secretariat for any questions or concerns: Sophie Courchene at sophie@skillscanada.com