2025 South West Regional Skills Canada Competition

Contest Description

Lethbridge Polytechnic (3000 College Drive South, Lethbridge)

March 8, 2025

<table>
<tr><td colspan="2">CHALLENGE EVENT: Heavy Equipment Technician Challenge</td><td>LEVEL: Secondary</td></tr>
<tr><td colspan="2">DURATION OF CONTEST: 4 HOURS 40 MINUTES</td><td>LOCATION:
Lethbridge Polytechnic – TT1963</td></tr>
<tr><td colspan="2">CHALLENGE SCHEDULE:
<table><tr><td>CHECK IN (FOUNDERS' SQUARE)</td><td>8:30 A.M.</td></tr><tr><td>INTRODUCTION, ORIENTATION AND SAFETY</td><td>8:45 A.M.</td></tr><tr><td>CHALLENGE BEGINS</td><td>9:10 A.M.</td></tr><tr><td>LUNCH</td><td>11:30 A.M.-12:00 P.M.</td></tr><tr><td>CHALLENGE ENDS</td><td>2:20 P.M.</td></tr><tr><td>SKILLS DEMO</td><td>2:30 P.M.</td></tr><tr><td colspan="2">TOUR SCHEDULE</td></tr><tr><td>CHECK IN (FOUNDERS' SQUARE)</td><td>1:15 P.M.</td></tr><tr><td>SHOP TOUR</td><td>1:30 P.M.</td></tr><tr><td>SKILLS DEMO</td><td>2:30 P.M.</td></tr></table></td><td>THIS IS A CHALLENGE EVENT. THERE IS NO ADVANCEMENT.</td></tr>
<tr><td colspan="3">AWARDS CEREMONY INFORMATION: The awards ceremony will be held at 4:00 p.m. in the Swing Space (AN1804). It is open to the public; parents are encouraged to attend.</td></tr>
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CHALLENGE INTRODUCTION

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

SKILLS AND KNOWLEDGE TO BE TESTED

Use hand, power, and diagnostic tools to carry out maintenance or diagnosis and repair safely and competently according to manufacturer's specifications. Read and understand work orders, prepare estimates, and interpret technical service information.

CHALLENGE DESCRIPTION

Participants 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 participant's ability to safely and efficiently maintain or diagnose and repair heavy equipment (on-road and off-road, mobile, and stationary). Participants have equal opportunity to research, practice, and refine their knowledge and skill prior to the challenge.

There will be 6 different tasks; each task is allotted 40 minutes.

1. Hydraulic Systems

Participants may be required to:

- Read and follow hydraulic schematics.
- Measure and adjust main relief pressure settings
- Be able to explain the purpose of a hydraulic pilot system.
- Disassemble and reassemble a hydraulic pump and or a cylinder, explain how it functions.

2. Engine Systems

Participants may be required to:

- Remove and install components on an engine.
- Measure engine components for flatness, out of round, taper, diameter, endplay, clearance, and lift. The participant may be required to use dial indicators, straight edges, feeler gauges, micrometers, telescopic gauges, plastigage or calipers.
- Set valve lash clearances

3. Drive-Train Systems

Participants may be required to:

- Identify the type of suspension and steering systems used in a vehicle.
- Interpret alignment angles in relation to manufacturer's specification and vehicle handling
- Dismount and mount a tire on a rim.
- Measure differential pinion bearing preload.
- Measure backlash in a differential assembly.
- Identify whether a gear tooth pattern is acceptable.
- Identify paths of power in a manual transmission.
- Calculate gear ratios in a manual transmission.
- Identify components in a manual transmission.

4. Electrical Systems

Participants may be required to:

- Perform electrical measurements on a vehicle electrical circuit to verify operation. The measurements will be done with a DVOM and/or a test light.
- Assemble basic electrical systems on a circuit board.

5. Steering, Braking and Undercarriage Systems

Participants may be required to:

- Dis-assemble and assemble disc or drum brake assemblies.
- Measure minimum rotor thickness, maximum rotor thickness variation, and rotor run-out.
- Measure brake drum diameter and brake drum out of round.
- Properly adjust brake shoe to drum clearance.
- Properly set wheel toe in.
- Adjust wheel bearings.

6. Workplace Practices

Participants may be required to:

- Use imperial and metric measuring tools (including micrometers, dial calipers, dial indicators, telescopic gauges, small hole gauges, feeler gauges.)
- Calculate dimensions based on the measurements taken from supplied project jig.
- Identify and classify fasteners that are provided.
- Using supplied information (directions, tap drill charts and torque chart) perform correct drilling, correct tapping and installation of fasteners to project piece.
- Correctly set and use a torque wrench.

EQUIPMENT & MATERIALS

Equipment and Materials Participants Must Supply:

- CSA-approved footwear (Grade 1 protective toe)
- CSA-approved hearing protection
- CSA-approved clear (NON-tinted) safety glasses

JUDGING CRITERIA

The following judging criteria are weighted according to the task:

a) Use of safety equipment & safe and clean workspace
b) Use and interpretation of service manuals & schematic diagrams
c) Logical order of repair
d) Appropriate use of tools
e) Maintenance or repair of components or systems
f) Precision measurement
g) Superior Workmanship
h) Identification of faults, codes, or components
i) Communication of maintenance or repair process

TIE BREAKING PROCESS

In the event of a tie, the participant with the higher safety evaluation in the practical tasks will be awarded the higher ranking.

CLOTHING REQUIREMENT

To participate, participants must wear clean, rip-free work clothing that fits well--no loose-fitting clothing or casual wear such as shorts or open-toed shoes or sandals. Participants must not wear jewelry (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.

SAFETY

The health, safety and welfare of all individuals involved with South West Regional Skills Canada Alberta are of vital importance. Safety is a condition of participation with Skills Canada Alberta and shall not be sacrificed for the sake of expediency. At the discretion of the judges and technical committees, any participant can be denied the right to participate should they not have the required proper safety equipment or act in an unsafe manner that can cause harm to themselves or others.

ADDITIONAL INFORMATION

Lunch will be provided for all competitors, teachers and judges. Your ticket will be in the back of your nametag. Unfortunately, all allergies may not be able to be accommodated for. Please contact the local Regional Coordinator for more information.

PARKING INFORMATION & VENUE MAPS

Please park in Lot V – there will be no charge. Overflow will also be available in Lot P. A printable parking map of the Lethbridge Polytechnic can be found at: https://lethpolytech.ca/document-centre/facilities-management/parking-map

REGIONAL REGULATIONS AND POLICIES

A copy of the Skills Canada Alberta Regional Regulations & Policies can be found at the following link: http://www.skillsalberta.com/policies-and-procedures

CHALLENGE AND TOUR SCHEDULE

8:30	Challenge participants check-in at Founders' Square
8:45	Introduction, Orientation & Safety
9:10	Challenge Begins
11:30	Lunch Break – 30 minutes
12:00	Challenge resumes
2:20	Challenge ends – Judging Begins
4:00	Awards Ceremony (Swing Space - AN1804) – open to the public

REGIONAL COMMITTEE MEMBERS

Sheldon Anderson	Lethbridge Polytechnic
Rick Davies	Alberta Apprenticeship
Chris Hay	Lethbridge Polytechnic
Holly Lehbauer	Career Transitions
Rob Mitchell	Southland International
Judy Stolk-Ingram	Career Transitions