

K-05a

ELECTRICIAN TRAINING

SKILL CHECK GUIDE

Duty K: PLC (Allen-Bradley)

K-05a: Modify PLC Program

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Rationale

This Skill Development Guide provides the knowledge needed to modify a PLC program. At Caterpillar, programs are modified to incorporate engineering changes and to troubleshoot machines. Typical modifications include changing instructions and addresses, adding/deleting instructions, and adding/deleting rungs. Temporary modifications are performed when troubleshooting machinery. The Learner must exercise extreme caution when modifying online to avoid unexpected machine movement.

Skill Check Set-Up

Select a PLC-controlled machine for the Skill Check. Contact the Operator where the PLC is located to schedule a convenient time for the Skill Check. Set up either of these two situations.

- Provide the Learner with an Engineering modification. Ask the Learner to modify the PLC program to include the change. Ask the Learner to cycle the machine to verify the program change.
- Provide the Learner with a troubleshooting scenario which will require bypassing an input or output device which will have a predictable effect. Ask the Learner to cycle the machine to verify the effect of the bypassed device. After verification, the modification must be removed.

You must make available the tools, materials, and resources needed to demonstrate the task.

What The Learner Will Need

This section contains the safety information, tools, and resources you will need before modifying a PLC program.



- Follow all Caterpillar Facility Safety Standards when performing this task in the plant.
- Use caution when working around the PLC; high voltage is present on the inside of the PLC cabinet door and near the input/output (I/O) chassis.
- Be careful when working near moving or rotating machinery.
- Wear safety glasses and hearing protection in assembly and production areas.
- Use caution when making any modifications, pay attention to values, addresses, etc.
- When making any changes to the program, especially when you are online, exercise caution when putting the machine back in cycle.



- PC equipped with PLC software
- PLC
- Interconnect cable
- Floppy disk (to back up processor memory, if necessary)
- Processor Keyswitch Key (if the processor is not in the REM position)
- Password (if necessary)



- Electrical Schematics
- Ladder Diagram printout
- Engineering Modification



Skill Check

Upon receiving a request to perform a permanent modification, or after determining a need to perform a temporary modification, modify the PLC program.

Needs
Mastered Practice

Safe Work Practices

- | | | |
|-------|-------|---|
| _____ | _____ | 1. Follow all Caterpillar Facility Safety Standards when performing this task in the plant. |
| _____ | _____ | 2. Use caution when working around the PLC; high voltage is present on the inside of the PLC cabinet door and near the I/O chassis. |
| _____ | _____ | 3. Be careful when working near moving or rotating machinery. |
| _____ | _____ | 4. Wear safety glasses and hearing protection in assembly and production areas. |
| _____ | _____ | 5. Use caution when making any modifications, pay attention to values, addresses, etc. |
| _____ | _____ | 6. When making any changes to the program, especially when you are online, exercise caution when putting the machine back in cycle. |

Task Standards

- | | | |
|-------|-------|--|
| _____ | _____ | 1. The machine demonstrates the effect of the modification. |
| _____ | _____ | 2. The machine operates within specifications and meets production requirements. |



Evaluator's Sign-Off

The Learner has demonstrated safe work practices and competent performance of the task.

Evaluator: _____ Date: _____

Learner: _____ Clock No: _____