Allen Bradley SLC-500 Training
Forcing Inputs & Outputs Lab

Upon completion of this lab, the student should be able to:

1. Explain the purpose of using a force command in a PLC processor.
2. Explain the safety issue involved with forcing I/O on a PLC controlled machine.
3. Interpret the Force indicator light on the SLC-500 processor.
4. Force an input or output on/off in a PLC processor.
5. Explain how forcing affects the program, force tables and image tables in a PLC processor.

WARNING: Forcing inputs or outputs on an actual production machine can create a potential hazard for personnel and machinery. This is due to the fact that forcing bypasses the typical operation of a program, which was designed to run a machine.

IMPORTANT: This lab should be ran on a hardware simulator only. The forcing command will not function properly if ran on a virtual simulator.

Create the following program within a new RSLogix500 project. Save it to a local drive. Download it to the SLC-500 processor, go online, and then perform the following tasks.

Figure 1. PLC program used to force inputs and outputs.

1. Turn on Input4, Input5 and Input6, to verify that all 3 outputs are functional. Then open all 3 inputs to continue with the Force Lab.
2. Force Output1 on, and enable the force. Does the output physically turn on?

Does the coil (OTE) in the PLC program highlight? Explain!!

What is the state of the “FORCE” diagnostic indicator on the front of the processor?

Does the XIC addressed as Output1 in rung 1, highlight turning on Output 2 (assuming Input4 & Input5 is off)?

3. Turn on Input4 and Input5. This should highlight the OTE for Output1.

Does the XIC (normally open) addressed as Output1 in rung 1 highlight?

4. Remove the force on Output1.

5. Force Off Output1, and enable the force.

6. With Input4 and Input5 still on. Does Output1 turn on?

Does Output2 turn on?

7. Remove all forces.

8. Force On Input6, and enable the forces. Does Output3 turn on?

Toggle Input6 on and off. Does it affect the status of Output3?

9. Remove the force from Input3.

10. Force Off Input6, and enable the forces. Does Output3 turn on?
Toggle Input6 on and off. Does it affect the status of Output3?

Questions:

1. What does it mean if the FORCE indicator on an SLC-500 processor is blinking?

2. What does it mean if the FORCE indicator on an SLC-500 processor is on (constant)?

3. T F The output force table will override the output image table in an SLC-500 processor.

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