

Practice Quiz:

1. **T F** If the Fault light on an SLC-500 processor is blinking red, or solid red, the outputs controlled by the PLC are typically disabled.

Explanation: On an SLC-500 system, a major fault will shut down the processor scan and disable the outputs. The fault light will go solid red if there is a hardware failure (such as a processor going bad). The fault light will blink red if there is what is called a “run-time” error, or a software fault. An example of this type of fault is someone pulling an I/O module out of the rack when the machine is running. The processor detects a mismatch between the I/O configuration and the actual I/O. A minor fault will not typically shut down the processor. An example of a minor fault is the battery getting low or going dead. The battery light will come on, but will not shut down the processor.

2. **T F** If an I/O module in an SLC-500 I/O chassis is slightly removed and then pushed back in (to reset the module) the SLC-500 processor will continue running the machine.

Explanation: If a module is pulled from the chassis, the processor will fault out, with typically a blinking FLT light (which can be reset by cycling the processor key switch from RUN to PROG, back to RUN or REM), which will shut down the system. Why? Well during a download, the I/O configuration is sent to the processor and when in run, or remote run mode, the processor compares the status of the I/O chassis to the I/O configuration file. On some systems, this is called the traffic cop. If there is ever a difference, then the processor faults out. This is due to safety concerns.

3. **T F** A battery on an SLC-5/05 processor can be replaced while the processor is running.

Explanation: The battery on SLC-5/03, 5/04 and 5/05 type of processors is located in the rear of the processor, not accessible when the processor was mounted in the I/O chassis. The processor must be pulled out of the chassis to replace the battery, thus the machine will have to be shut down to do this.

4. **T F** After doing an Online programming change with RSLogix500, the change is automatically updated in the .RSS project file that is stored on the program panel hard drive.

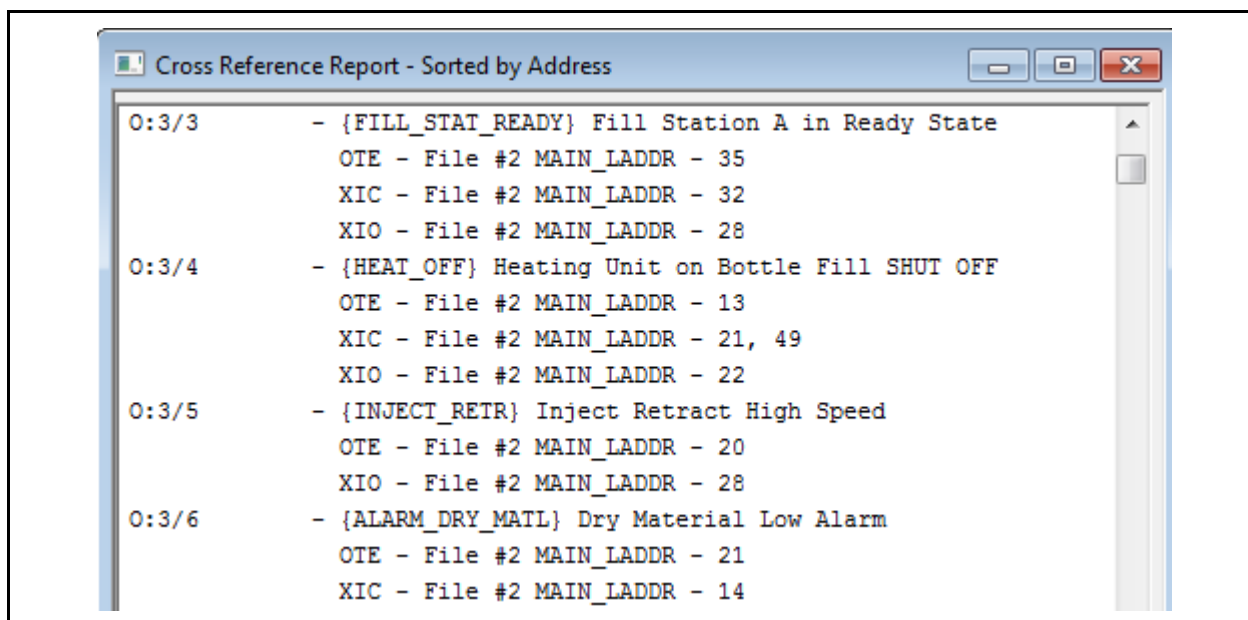
Explanation: After doing an Online programming change in the processor with RSLogix500, the user must do an Upload (processor to program panel) to save the change in the .RSS file on the program panel. If the user is online with RSLogix500, they can do a Save, which is the same as an Upload.

5. **T F** Resetting a processor back to factory default settings, will also clear the PLC program out of the RAM memory.

Explanation: Whenever an SLC-500 modular processor (or any type of PLC processor) goes into a hardware fault, there is the possibility of the processor being unrecoverable. A hardware fault can be determined if the FLT light on the processor illuminating solid red. The user should first cycle the power, then power down and reseat the processor. If neither of these work, then try to set up communication with RSLinx, so RSLogix500 can be used to download a copy of the PLC program from the program panel. If the program panel cannot communicate with the processor, then the last effort should be to reset the processor to factory defaults. To do this on an SLC-500 modular processor, the user would remove the processor from the chassis, pull the battery connector, short a screwdriver across the capacitor (VCC to ground) for a few seconds (the AB manuals say for 60 seconds). Insert the processor into the chassis, power up the chassis, and try to setup communications with the program panel. If this fails, replace the processor. If there is success, then download the project into the PLC processor and start the machine startup process.

6. T F An SLC-5/04 processor will continue to run a machine, if the FLT indicator light on the processor is blinking red.

Explanation: A solid red FLT light means a hardware fault (processor could be bad). A blinking FLT light is a run-time fault, which means that the processor operating system does not like something and it will shut the processor down (scan stops and the the outputs are disabled). An example of this is if a module is pulled from the chassis, and the processor senses a difference between the actual I/O, and the I/O configuration. A simple way to reset this type of error is to cycle the processor key switch from RUN or REM, to PROG, then back to RUN, then back to REM. If this does not reset the fault, the user must go online with RSLogix500, and reset the fault.



7. What rung in the PLC program will the standard output coil instruction for O:3/3 be located, based on this RSLogix500 Cross Reference Report?
- 2:13
 - 2:32
 - 2:35**
 - 2:28

Explanation: The cross reference report in RSLogix500 will show the location within the program where any addressed instructions are located. This example shows that the OTE (standard output coil) instruction for O:3/3 (FILL_STAT_READY) is located in program file #2, rung 35 (2:35). The XIC (normally open instruction) for O:3/3 is located on rung 2:32. The OTE for O:3/5 is located on rung 2:20. The address symbols and address descriptions are also shown in the cross reference report.

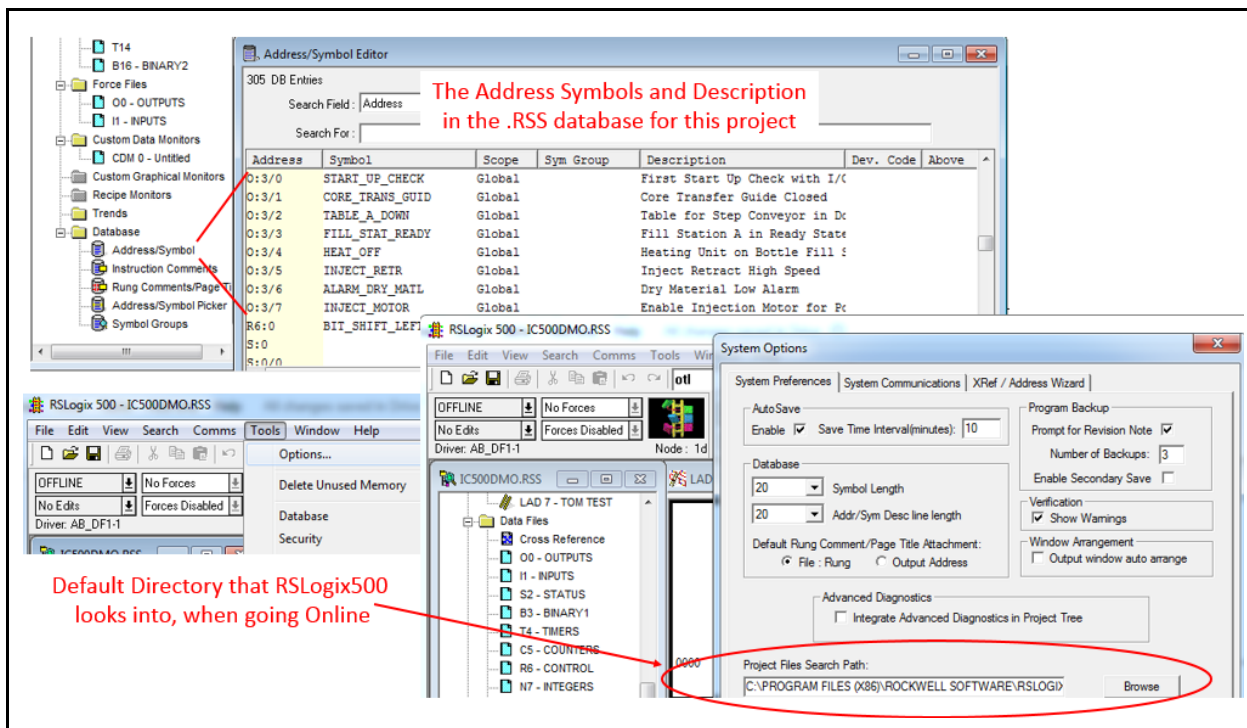
8. Which of the following data types cannot be forced?
- Inputs
 - Outputs
 - Binary**
 - All of the options can be forced

Explanation: Only the input and output bits can be forced on or forced off. No other data types can be forced. There is a FORCE indicator light on the processor. If this indicator is off, there are not forces in the PLC program. If the indicator is flashing on/off, there are forces, but the force table is not enabled. If the indicator is on solid, there are forces and the force table is enabled, which means the output forces will go on or off, bypassing the PLC program instructions, and the input forces will affect the input image table and bypass the input module.

9. Which one of the following steps in an Online Programming change in RSLogix500 would be the last one to actually implement the programming change into the program?
- a. Test Edits
 - b. Accept Rung Edits
 - c. Start Rung Edits
 - d. Assemble Edits**

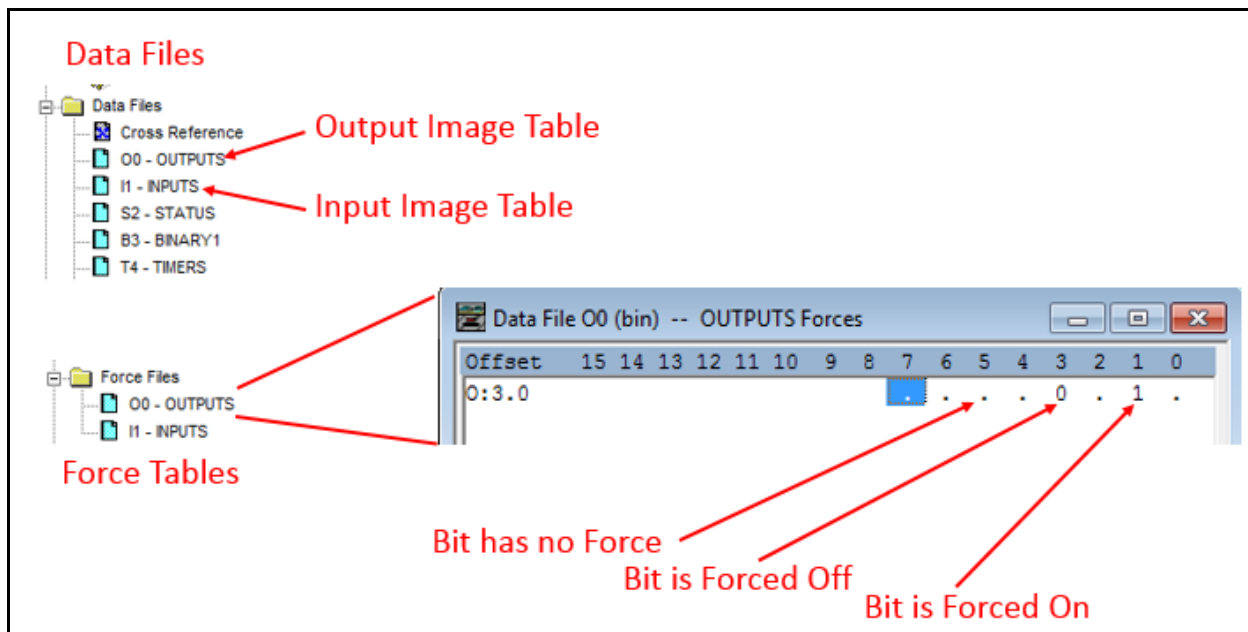
Explanation: To do an Online Programming change in an SLC-500 processor, the program panel must be online. The user will right click on the left edge of the rung and choose Start Rung Edits. This will duplicate the rung, and show the user the rung that will be edited, and the original rung (which will have the scan on it). The user will do the online edits, then Accept the Rung Edits, which will actually write the change into the processor (capital letters show up on the left edge of the rung). Next the user will Test Edits, which will move the scan from the original rung, to the edited rung (careful on this, your changes are now live). If the programming changes are satisfactory, then the user will Assemble Edits, which will have the edited rung replace the original rung in the program. The programming change is now in the processor. The user must do a Save (Upload) to write the change into the .RSS file.

10. T F No matter where the .RSS project file for RSLogix500 is located on the hard drive, RSLogix500 will open the project file correlated with the processor, and view the address symbols and descriptions on the screen.



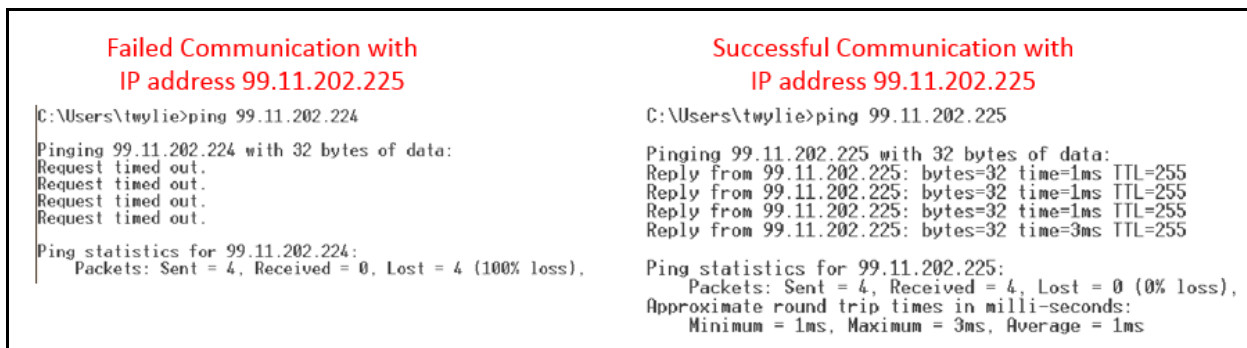
Explanation: Under Tools, then Options within the RSLogix500 menus, the user can set the Project File Search Path (sometimes termed the default director). This is where the project files (.RSS) should be stored on the Program Panel drive. When RSLogix500 goes online to a processor, it reads the processor name from the processor, then goes to the Project File Search Path folder, looks inside the .RSS files until it finds a matching processor name, then opens the database of that project, showing the address symbols and descriptions on the ladder logic of the online program view. If it cannot find a .RSS project with a matching processor name, it will ask the user if they want to create one. Careful with this because when you close it, RSLogix500 will ask if you want to save. If you do, it will be a .RSS file with no symbols or descriptions in the database. Sometimes programmers will make the .RSS file name, the same as the processor name (8 characters), so that if RSLogix500 cannot find the .RSS file, the user can do a search within Windows Explorer to find the file, then put it in the default directory.

11. T F If the Forces are Enabled, and an output is forced on, the force will bypass the ladder logic and the output image table and turn on the output.

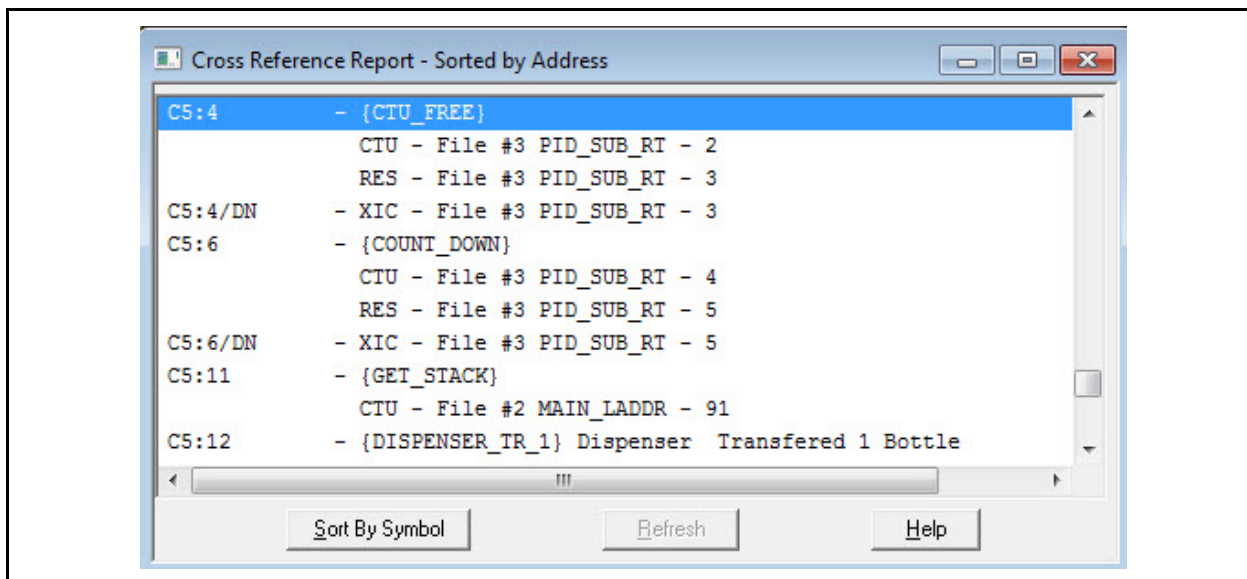


Explanation: Forces have to be enabled in order to have them affect the PLC system. First of all, forcing is dangerous. If a hydraulic directional control valve is forced on, the ladder logic no longer controls it, so it can wreck a machine. Forces turn on or off outputs when the processor is in the Run or Remote Run mode. A forced input turns on the bit in the input image table. A forced output does not turn on the bit in the output image table, but instead directly turns on the output. As a safety feature, if an output coil instruction turns on in the ladder program, it sets the bit in the output image table, then when the processor is scanning, this bit is referenced if there are XIC or XIO instructions addressed with this output. An output that is forced on or off does not affect the ladder logic scan. In this graphic, a “1” in the force table means Force On. A “0” in the force table means Force Off. A period means no force. Also, a flashing FORCE indicator on the processor means there are forces, but they are not Enabled. A solid on FORCE indicator on the processor means the forces are enabled.

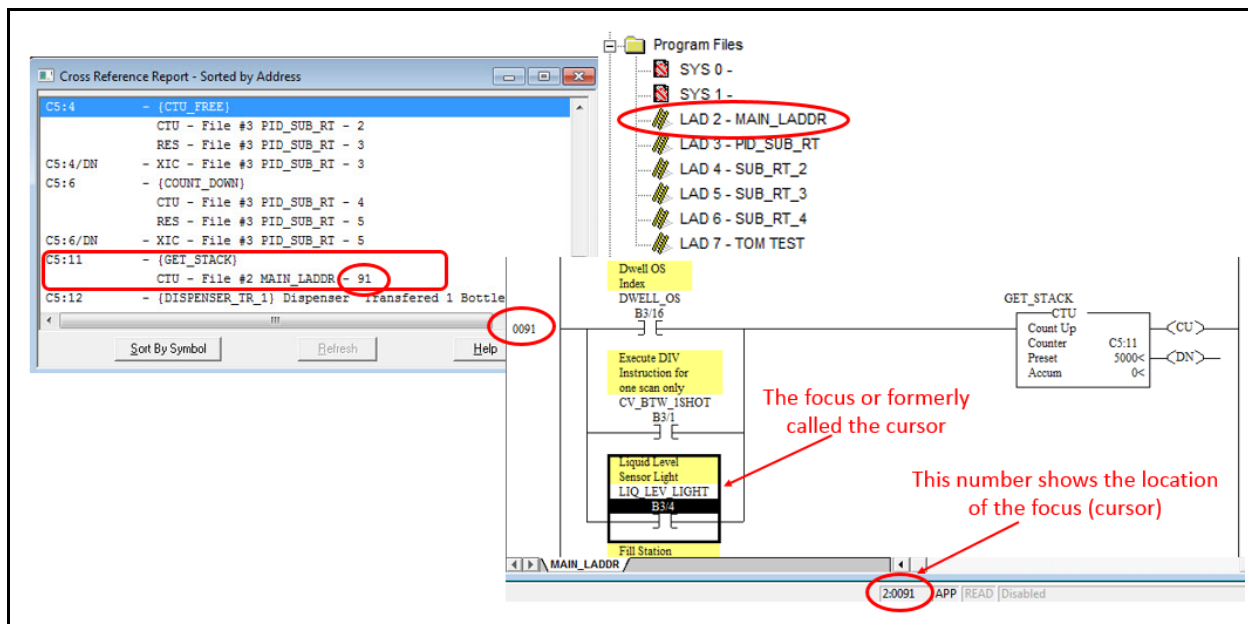
12. Which of the following would be the command, at the Command Prompt the user would use to determine if there is a clear path for communications over an Ethernet network from the program panel to the SLC-5/05 processor?
- COMM
 - ECOM
 - PING**
 - IPCONFIG



Explanation: At the command prompt, the user would type in PING, then a space, then the IP address of the station that they wish to communicate with, and press the Enter key. The graphic on the left shows a failed attempt at communicating with the Ethernet port that has the IP address of 99.11.202.225 allocated to it. Notice the Request timed out response. The graphic on the right shows successful communications. It shows that 32 bytes were sent and sent back within 1-3 milli-seconds. The TTL of 255 means that the Time To Live for the data packets is 255 milli-seconds. If there is not response in that time, the packet disintegrates, minimizing useless traffic on the network.



13. From the following cross reference report, what program file and rung number is CTU for C5:11 stored in?
- 3:2
 - 2:91**
 - 3:91
 - Cannot determine from this report

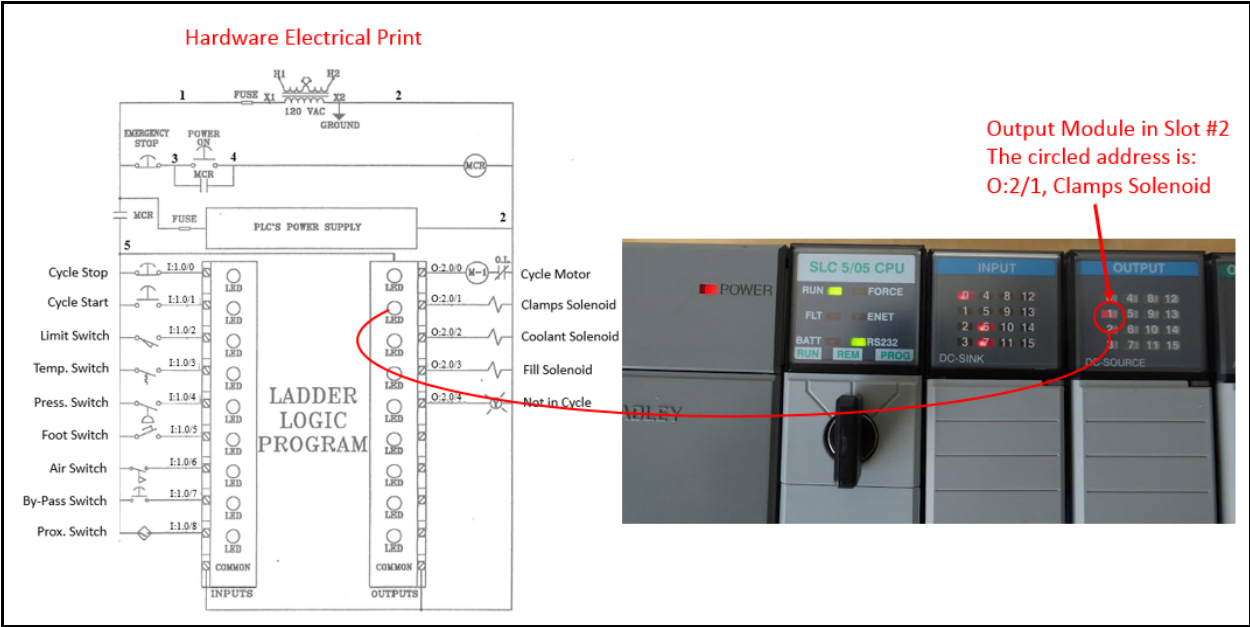


Explanation: In this graphic, the Cross Reference Report shows that the CTU for C5:11 is located on rung 2:91 (Program file 2, rung 91). This means the rung is in ladder file 2 (as shown in the upper right of this graphic). In the lower right portion of the graphic, the rung where the CTU is located is shown. Also notice that the focus (cursor) is on the XIC of B3/4 on rung 91. At the bottom of the ladder view, the location of the focus (cursor) will be listed based on the program file and rung number.

14. **T F** The first processor indicator light that a Technician should check on an SLC-500 processor if a machine shut down for no apparent reason, is the FORCE indicator.

Explanation: The first indicator light to check is the RUN light. If it is on, then the processor is scanning, and should be working. If this light is not on, then check the POWER light on the power supply. Also the FLT (Fault) indicator light can indicate if a hardware or software fault has occurred. It is good to see if the battery light is on, but even if the battery is dead, the machine can keep running with no problem. It is if the power goes off and the battery is dead. This will create a major fault, requiring a PLC program download from the program panel.

15. **T F** If a discrete output fails on an SLC-500 controlled machine, the user would use an electrical hardware print to determine the output address, in an effort to check the output status light.

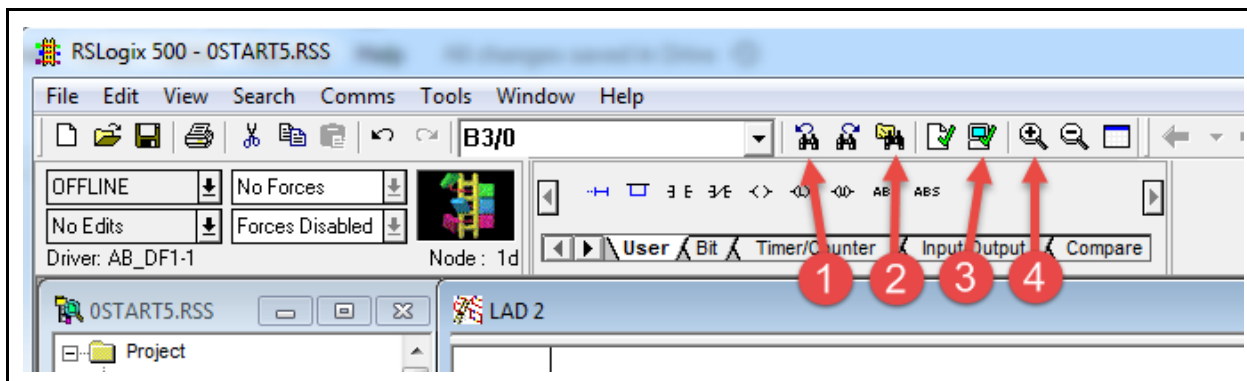


Explanation: The hardware electrical print shows how the control circuit is wired. If an output stops working, the user must determine the address of that output. If a Clamps Solenoid quits working, the user must find the status light to determine if the processor is telling it to turn on. The user must find the electrical print. Notice that the print shows that the Clamps Solenoid is address O:2/1. The user will go to slot 2, light 1. If the indicator light is on, the user will then check the output voltage. If there is no output signal coming out of the module when the status light is on, the module is probably faulty. If the output status light is on and signal is coming out of the module, then the problem is not the PLC system, and could possibly be a bad Clamps Solenoid. If the output indicator is not on, but the machines operation personnel believe it should be, then it could be an input problem. At this point, the user should connect the program panel, go online, search for output O:2/1.



16. Based on the information in this graphic, what mode is the SLC-5/05 processor in?
- a. Program Mode
 - b. Run Mode
 - c. Remote Run Mode**
 - d. Remote Program Mode

Explanation: If the key switch is in the RUN position, the processor will be in the Run Mode. If the key switch is in the PROG position, the processor will be in the Program Mode. If the key switch is in the REM position, and the RUN light is on, the processor is in the Remote Run Mode.

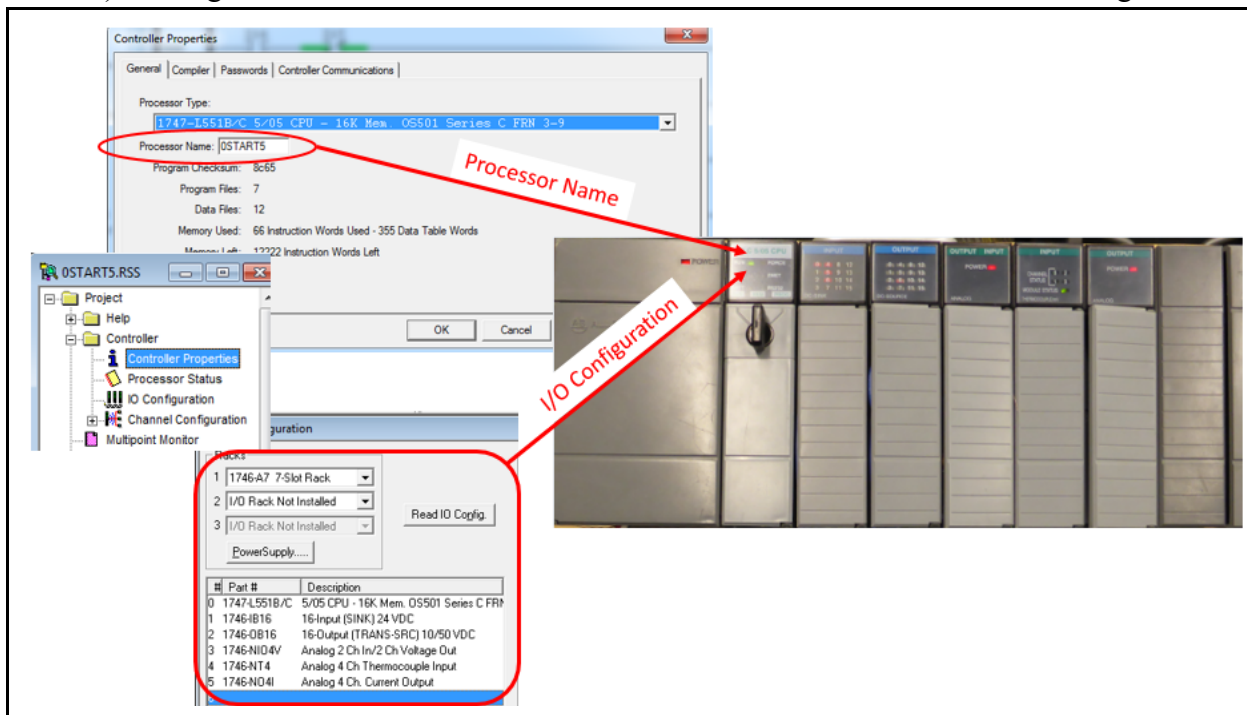


17. The RSLogix500 icon that verifies a project, to check that everything is addressed correctly in the ladder program is marked as:
- a. Number 1
 - b. Number 2
 - c. Number 3**
 - d. Number 4

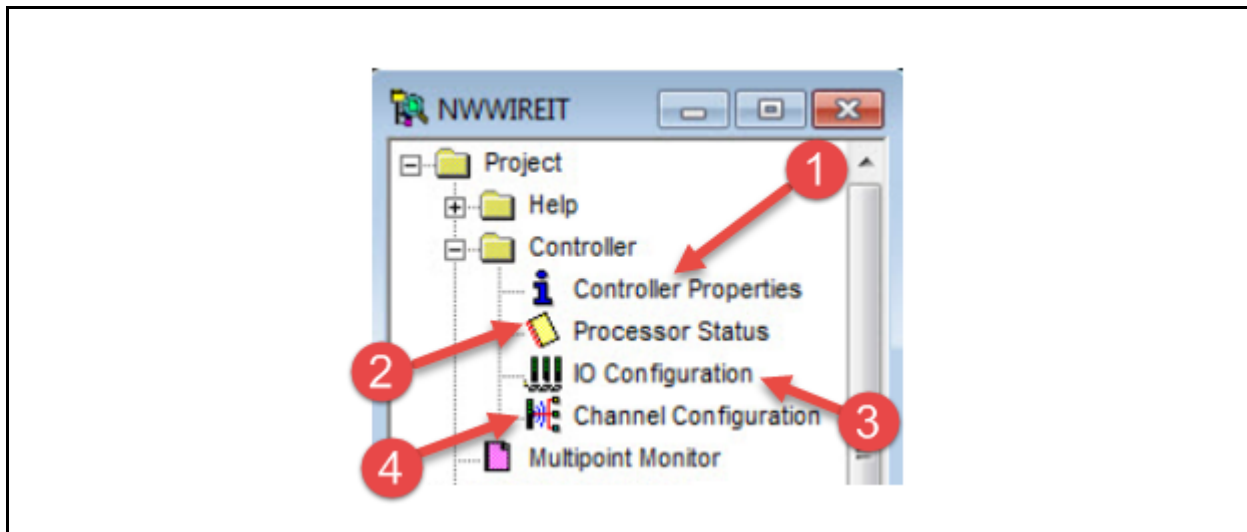
Explanation: Number 1 is “Search Previous), Number 2 is “Search All”, which will find all the places in the program where an address is used, when the address is put into the search box. Number 3 is the “Verify Project” icon, which will verify that all the ladder instructions are

addressed with valid addresses, and verifies other things in the project as well. Number 4 is the Zoom In icon, which will zoom in on the ladder display.

18. T F It is not necessary to do a “Read IO Config” if a discrete I/O module has to be replaced on an SLC-500 chassis, and replaced with a slightly different module (different module number), as long as the new module has the same number of I/O, and is the same voltage.



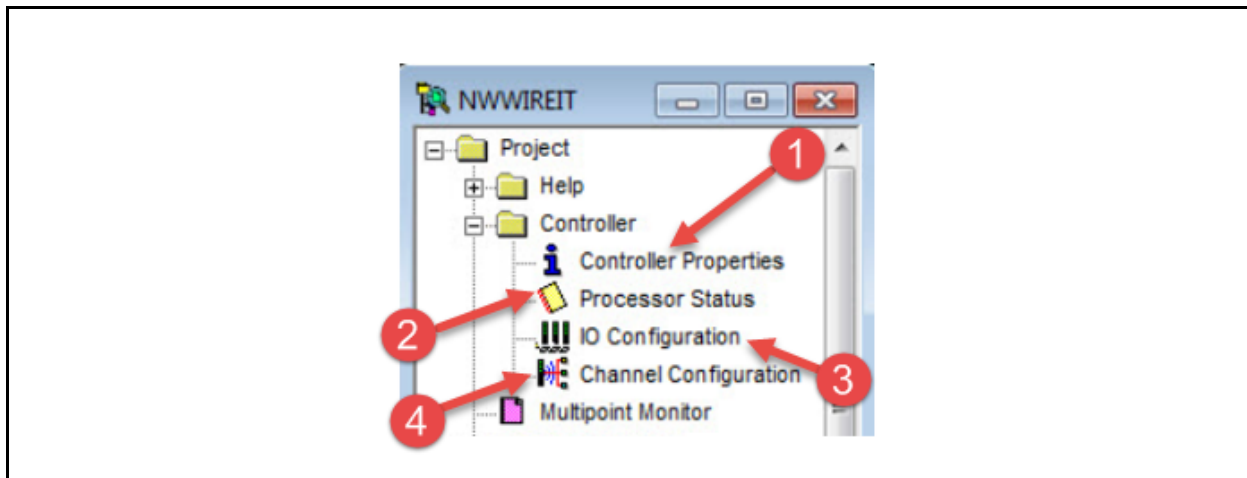
Explanation: When the Controls Designer creates a PLC program to control a machine, the I/O configuration is read from the actual I/O chassis via RSLinx and RSLogix500. This I/O configuration is saved with the project on the program panel hard drive. When a download occurs, the I/O Configuration is sent to the processor. The processor compares the I/O configuration with the actual I/O in the chassis. If there is ever a mismatch, the processor will fault out, shutting down the machine. If an I/O module or processor is replaced, it must be an exact match. If the user wishes to put in a module with a different number, the module will have to be installed, then another Read IO Config has to occur within RSLogix500, then save, then downloaded to the processor so it has the update I/O Configuration to compare to the actual I/O chassis.



19. Which one of the selections under the Controller folder in the project view of RSLogix500 would the user choose to change the IP address of the Ethernet port of an SLC-5/05 processor?

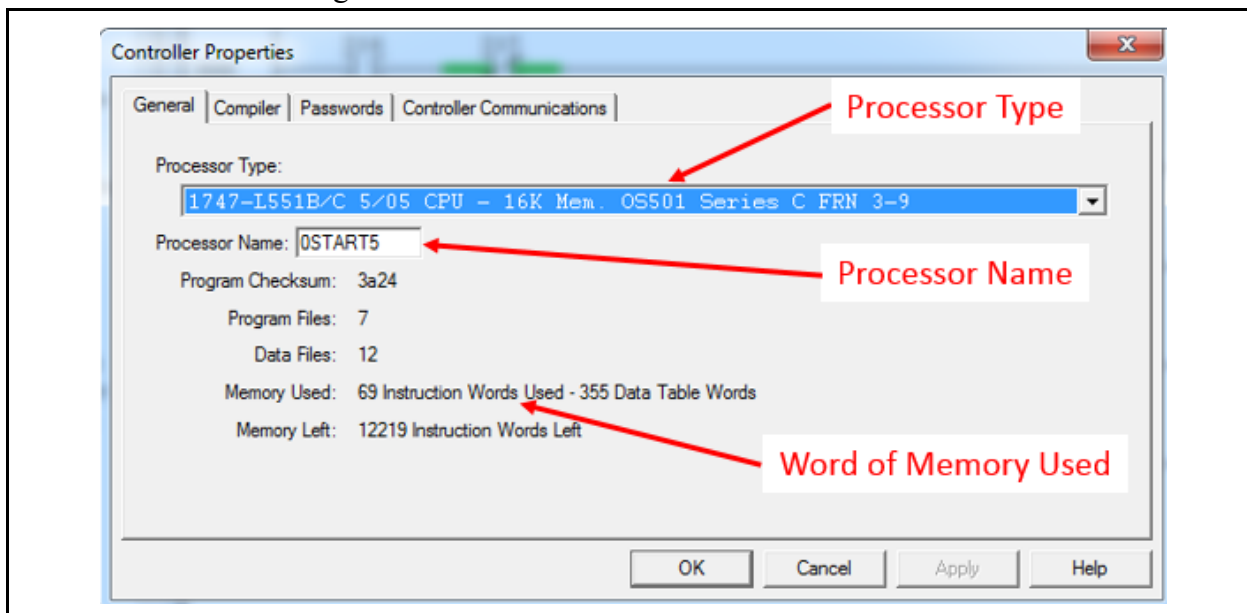
- a. 1 - Controller Properties
- b. 2 - Processor Status
- c. 3 - IO Configuration
- d. 4 - Channel Configuration**

Explanation: Controller Properties is used to change the processor type, and the name of the processor. Processor Status will allow the user to view the Status data file (file #2). This will show everything going on in the processor, such as fault information, scan time, et. IO Configuration will show what types of modules are in each slot of the chassis, as well as the processor. It is important to know that this is the choice if a different module is replacing an existing module. The user must do a Read IO Configuration. Channel Configuration is where the user will go to change the settings on the communications port. In the case of an SLC-5/05, the user can change the RS-232 port (channel 0), or the Ethernet port (port 1). So if an IP address must be changed, this is the option to choose.



20. Which one of the selections under the Controller folder in the project view of RSLogix500 would the user choose to see how much of the processor memory is used, and how much is still available for adding to the ladder file and data file.

- e. 1 - Controller Properties
- f. 2 - Processor Status
- g. 3 - IO Configuration
- h. 4 - Channel Configuration



Explanation: The information on this graphic is somewhat explanatory. Notice that since this graphic was captured when RSLogix500 was offline with the project, the user can change the processor name and the processor type. The Memory used will change automatically as the project is modified (data files and ladder logic).

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