





Pressurized Water Reactor (PWR)

A. Identify the powerplant parts by writing the number of the correct powerplant part on the blank.

- | | | |
|------------------------------------|----------------------------------|----------------------------------|
| 1. reactor | 5. steam-generator | 8. first water loop |
| 2. control rods | 6. turbine-generator | 10. second water loop |
| 3. cooling water loop | 7. transmission lines | 11. nuclear fuel |
| 4. containment building | 8. condenser | 12. cooling tower |

B. Color the separate loops using a different color for each loop. Use the following symbols to show what is in the loop or part of the loop.

 = steam	 = steam converted back to water	 = cooling water
 = water in first loop		

1. What part of the nuclear reactor converts...

a. nuclear energy to heat energy?

reactor

b. heat energy to mechanical (moving) energy?

turbine

c. mechanical energy to electrical energy?

generator

2. Why is a cooling tower needed at a nuclear power plant?

3. How is the rate of the nuclear chain reaction controlled in a nuclear reactor?

Moving the control rods up & down

4. What is the purpose of moderators in a nuclear reactor?

slow down the neutrons

5. Why do think there are two loops (primary "first water loop" and secondary "second water loop") in a Pressurized Water Reactor nuclear plant? Explain.

6. Is there a nuclear power plant nearby? How far away is it? Should you be concerned?

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104 nuclear
plants

$35^{\circ}38'0''$ N, $78^{\circ}57'18''$ W
ECHHS: $35^{\circ}57'38''$ N, $79^{\circ}11'45''$ W