TOPIC: 293010
KNOWLEDGE: K1.01 [2.4/2.8]
QID: B499 (P497)

Which one of the following comparisons will result in a higher probability for brittle fracture of the reactor vessel?

A. A high gamma flux in the reactor rather than a high neutron flux.

B. A high oxygen content in the reactor coolant rather than a low oxygen content.

C. A high material strength in the reactor vessel rather than a high material ductility.

D. A rapid 100°F reactor cooldown at a high temperature rather than at a low temperature.

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.01 [2.4/2.8]
QID: B2499 (P2496)

Brittle fracture of a low-carbon steel is more likely to occur when the temperature of the steel is __________ the nil-ductility transition temperature; and will normally occur when the applied stress is __________ the steel's yield strength (or yield stress) at room temperature.

A. less than; less than

B. less than; greater than

C. greater than; less than

D. greater than; greater than

ANSWER: A.

TOPIC: 293010
KNOWLEDGE: K1.02 [2.2/2.7]
QID: B1299 (P1896)

Brittle fracture of the reactor vessel (RV) is most likely to occur during a reactor ___________ when RV temperature is ___________ the nil-ductility transition temperature.

A. cooldown; above

B. heatup; above

C. cooldown; below

D. heatup; below

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.02 [2.2/2.7]
QID: B1500 (P697)

The nil-ductility transition temperature is the temperature above which...

A. a large compressive stress can result in brittle fracture.

B. a metal exhibits more ductile tendencies.

C. the probability of brittle fracture increases.

D. no appreciable deformation occurs prior to failure.

ANSWER: B.

TOPIC: 293010
KNOWLEDGE: K1.02 [2.2/2.7]
QID: B2099 (P2096)

Which one of the following will normally prevent brittle fracture failure of a reactor vessel?

A. Manufacturing the reactor vessel from low carbon steel.

B. Maintaining reactor vessel pressure below the maximum design limit.

C. Operating above the nil-ductility transition temperature.

D. Maintaining the number of reactor vessel heatup/cooldown cycles within limits.

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.02 [2.2/2.7]
QID: B2199 (P2295)

Brittle fracture of the reactor vessel (RV) is least likely to occur during a reactor __________ when RV temperature is __________ the nil-ductility transition temperature.

A. cooldown; above

B. heatup; above

C. cooldown; below

D. heatup; below

ANSWER: B.

TOPIC: 293010
KNOWLEDGE: K1.02 [2.2/2.7]
QID: B2299 (P996)

The nil-ductility transition temperature is that temperature...

A. below which vessel failure is imminent.

B. above which vessel failure is imminent.

C. below which the probability of brittle fracture significantly increases.

D. above which the probability of brittle fracture significantly increases.

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.02 [2.2/2.7]
QID: B2699 (P597)

The nil-ductility transition temperature of the reactor vessel (RV) is the temperature...

A. above which the RV metal will elastically deform as RV pressure decreases.

B. above which the RV metal loses its ability to elastically deform as RV pressure increases.

C. below which the RV metal will elastically deform as RV pressure decreases.

D. below which the RV metal loses its ability to elastically deform as RV pressure increases.

ANSWER: D.

TOPIC: 293010
KNOWLEDGE: K1.04 [2.9/3.2]
QID: B100 (P96)

The likelihood of brittle fracture failure of the reactor vessel is reduced by...

A. reducing gamma flux exposure.

B. reducing vessel temperature.

C. reducing vessel pressure.

D. increasing vessel age.

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.04 [2.9/3.2]
QID: B300 (P1897)

Which one of the following will apply a compressive stress to the outside wall of the reactor vessel?

A. Neutron embrittlement of the reactor vessel.

B. Increasing reactor pressure.

C. Performing a reactor cooldown.

D. Performing a reactor heatup.

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.04 [2.9/3.2]
QID: B398 (P397)

The conditions for brittle fracture of the reactor vessel are most closely approached at…

A. 400°F, 10 psig.

B. 400°F, 400 psig.

C. 120°F, 10 psig.

D. 120°F, 400 psig.

ANSWER: D.

TOPIC: 293010
KNOWLEDGE: K1.04 [2.9/3.2]
QID: B399 (P399)

The total stress on the reactor vessel inner wall is greater during cooldown than heatup because...

A. thermal stress during heatup totally offsets pressure stress at the inner wall.

B. both pressure stress and thermal stress are tensile at the inner wall during cooldown.

C. the tensile thermal stress at the inner wall is greater in magnitude than the compressive pressure stress at the same location during cooldown.

D. thermal stress during both cooldown and heatup is tensile at the inner wall, but the thermal stress during cooldown is greater in magnitude.

ANSWER: B.

TOPIC: 293010
KNOWLEDGE: K1.04 [2.9/3.2]
QID: B899 (P97)

The pressure stress on a reactor vessel wall is...

A. tensile across the entire wall.

B. compressive across the entire wall.

C. tensile on the inner wall, compressive on the outer wall.

D. compressive on the inner wall, tensile on the outer wall.

ANSWER: A.

TOPIC: 293010
KNOWLEDGE: K1.04 [2.9/3.2]
QID: B1899

Which one of the following comparisons results in a higher probability for brittle fracture of a reactor vessel?

A. Using a vessel fabricated from stainless steel rather than carbon steel.

B. Subjecting the vessel wall to a compressive stress rather than a tensile stress.

C. A high feedwater temperature rather than a low feedwater temperature.

D. Performing a 100°F/hr cooldown of the reactor rather than a 100°F/hr heatup.

ANSWER: D.

TOPIC: 293010
KNOWLEDGE: K1.04 [2.9/3.2]
QID: B2300

During a reactor plant heatup, the thermal stress applied to the reactor vessel wall is...

A. tensile across the entire wall.

B. tensile at the inner wall and compressive at the outer wall.

C. compressive across the entire wall.

D. compressive at the inner wall and tensile at the outer wall.

ANSWER: D.

TOPIC: 293010
KNOWLEDGE: K1.04 [2.9/3.2]
QID: B2399 (P2397)

Reactor pressure-temperature limit curves are derived by using a value for the reactor vessel nil-ductility transition temperature (NDTT) that is __________ than the actual NDTT; and the actual NDTT is verified periodically by __________.

A. higher; removing and testing irradiated specimens of reactor vessel material

B. higher; in-service inspection and analysis of the reactor vessel wall

C. lower; removing and testing irradiated specimens of reactor vessel material

D. lower; in-service inspection and analysis of the reactor vessel wall

ANSWER: A.

TOPIC: 293010
KNOWLEDGE: K1.04 [2.9/3.2]
QID: B2500

Which one of the following comparisons results in a higher probability for brittle fracture of a reactor vessel?

A. A feedwater pH of 8.5 rather than 9.0

B. A high oxygen content in the feedwater rather than a low oxygen content.

C. A 50°F/hr reactor cooldown rather than a 100°F/hr heatup.

D. A high gamma flux in the reactor rather than a high neutron flux.

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.04 [2.9/3.2]
QID: B2700

Which one of the following comparisons results in a higher probability for brittle fracture of a reactor vessel?

A. A compressive stress across the vessel wall rather than a tensile stress.

B. A higher feedwater temperature rather than a lower feedwater temperature.

C. Performing a 50°F/hr cooldown at 600 psia rather than a 50°F/hr cooldown at 200 psia.

D. Changing the reactor vessel manufacturing process to increase toughness while maintaining the same yield strength.

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.04 [2.9/3.2]
QID: B2999

Which one of the following operating limitations is designed to prevent brittle fracture of the reactor vessel?

A. Maximum setpoint for the main steam safety valves.

B. Maximum chloride concentration in the reactor coolant.

C. Maximum reactor pressure versus vessel temperature during heatup.

D. Maximum differential temperature between the vessel steam dome and the bottom head.

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.04 [2.9/3.2]
QID: B3700 (P3698)

A reactor is shutdown with the shutdown cooling system maintaining reactor coolant temperature at 240°F immediately following an uncontrolled rapid cooldown from 500°F. If reactor coolant temperature is held constant at 240°F, which one of the following describes the change in tensile stress on the inner wall of the reactor vessel (RV) over the next few hours?

A. Decreases, because the temperature gradient across the RV wall will decrease.

B. Increases, because the temperature gradient across the RV wall will decrease.

C. Decreases, because the inner RV wall temperature will approach the nil-ductility transition temperature.

D. Increases, because the inner RV wall temperature will approach the nil-ductility transition temperature.

ANSWER: A.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B299 (P1997)

Which one of the following describes the effect of fast neutron irradiation on a reactor vessel?

A. Increased fatigue crack growth rate

B. Increased plastic deformation prior to failure

C. Increased ductility

D. Increased nil-ductility transition temperature

ANSWER: D.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B400 (P398)

The likelihood of reactor vessel brittle fracture is <u>decreased</u> by minimizing...

A. the oxygen content in the reactor coolant.

B. operation at high reactor coolant temperatures.

C. the time taken to cool down the reactor.

D. the amount of copper contained in the metal used for the reactor vessel.

ANSWER: D.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B500 (P499)

Which one of the following types of radiation most significantly reduces the ductility of a reactor vessel?

A. Beta

B. Thermal neutrons

C. Gamma

D. Fast neutrons

ANSWER: D.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B599 (P298)

Prolonged exposure of a reactor vessel (RV) to a fast neutron flux will cause the RV nil-ductility transition temperature to...

A. decrease, due to the propagation of existing flaws in the RV wall.

B. increase, due to the propagation of existing flaws in the RV wall.

C. decrease, due to changes in the material properties of the RV wall.

D. increase, due to changes in the material properties of the RV wall.

ANSWER: D.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B1100 (P1100)

Two identical reactors have been in operation for the last 10 years. Reactor A has experienced 40 heatup/cooldown cycles with an average capacity factor of 50 percent. Reactor B has experienced 30 heatup/cooldown cycles with an average capacity factor of 60 percent.

Which reactor will have the lower reactor vessel nil-ductility transition temperature, and why?

A. Reactor A, due to the lower average capacity factor.

B. Reactor A, due to the greater number of heatup/cooldown cycles.

C. Reactor B, due to the higher average capacity factor.

D. Reactor B, due to the fewer number of heatup/cooldown cycles.

ANSWER: A.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B1200 (P1898)

Which one of the following is the major contributor to embrittlement of a reactor vessel?

A. High-energy fission fragments

B. High operating temperature

C. High-energy gamma radiation

D. High-energy neutron radiation

ANSWER: D.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B1800 (P1699)

Two identical reactors have been in operation for the last 10 years. Reactor A has experienced 30 heatup/cooldown cycles with an average capacity factor of 60 percent. Reactor B has experienced 40 heatup/cooldown cycles with an average capacity factor of 50 percent.

Which reactor will have the lower reactor vessel nil-ductility transition temperature, and why?

A. Reactor A, due to the higher average capacity factor.

B. Reactor A, due to the fewer number of heatup/cooldown cycles.

C. Reactor B, due to the lower average capacity factor.

D. Reactor B, due to the greater number of heatup/cooldown cycles.

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B1900 (P899)

After several years of operation, the maximum allowable stress to the reactor vessel is more limited by the inner wall than the outer wall because...

A. the inner wall has a smaller surface area than the outer wall.

B. the inner wall experiences more tensile stress than the outer wall.

C. the inner wall operates at a higher temperature than the outer wall.

D. the inner wall experiences more neutron-induced embrittlement than the outer wall.

ANSWER: D.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B1999 (P998)

Prolonged exposure to __________ will cause the nil-ductility transition temperature of the reactor vessel to __________.

A. neutron radiation; increase

B. neutron radiation; decrease

C. normal operating pressure; increase

D. normal operating pressure; decrease

ANSWER: A.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B2100 (P2098)

Two identical reactors have been in operation for the last 10 years. Reactor A has experienced 30 heatup/cooldown cycles and has an average capacity factor of 60 percent. Reactor B has experienced 40 heatup/cooldown cycles and has an average capacity factor of 50 percent.

Which reactor will have the higher reactor vessel nil-ductility transition temperature, and why?

A. Reactor A, due to the fewer number of heatup/cooldown cycles.

B. Reactor A, due to the higher average capacity factor.

C. Reactor B, due to the greater number of heatup/cooldown cycles.

D. Reactor B, due to the lower average capacity factor.

ANSWER: B.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B2600 (P2599)

Two identical reactors are currently shut down for refueling. Reactor A has an average lifetime capacity factor of 60 percent and has been operating for 15 years. Reactor B has an average lifetime capacity factor of 75 percent and has been operating for 12 years.

Which reactor, if any, will have the <u>lower</u> reactor vessel nil-ductility transition temperature, and why?

A. Reactor A, due to the lower average lifetime capacity factor.

B. Reactor B, due to the higher average lifetime capacity factor.

C. Both reactors will have approximately the same nil-ductility transition temperature because each reactor has produced approximately the same number of fissions.

D. Both reactors will have approximately the same nil-ductility transition temperature because fast neutron irradiation in a shutdown reactor is <u>not</u> significant.

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B2800 (P2799)

Two identical reactors have been in operation for the last 10 years. Reactor A has experienced 30 heatup/cooldown cycles and has an average capacity factor of 60 percent. Reactor B has experienced 20 heatup/cooldown cycles and has an average capacity factor of 80 percent.

Which reactor will have the <u>higher</u> reactor vessel nil-ductility transition temperature, and why?

A. Reactor A, due to the lower average capacity factor.

B. Reactor A, due to the greater number of heatup/cooldown cycles.

C. Reactor B, due to the higher average capacity factor.

D. Reactor B, due to the fewer number of heatup/cooldown cycles.

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B2900 (P2298)

Two identical reactors have been in operation for the last 10 years. Reactor A has experienced 40 heatup/cooldown cycles and has an average capacity factor of 50 percent. Reactor B has experienced 30 heatup/cooldown cycles and has an average capacity factor of 60 percent.

Which reactor will have the higher reactor vessel nil-ductility transition temperature, and why?

A. Reactor A, due to the greater number of heatup/cooldown cycles.

B. Reactor A, due to the lower average capacity factor.

C. Reactor B, due to the fewer number of heatup/cooldown cycles.

D. Reactor B, due to the higher average capacity factor.

ANSWER: D.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B3000 (P2698)

Two identical reactors are currently shut down for refueling. Reactor A has achieved an average lifetime capacity factor of 60 percent while operating for 15 years. Reactor B has achieved an average lifetime capacity factor of 60 percent while operating for 12 years.

Which reactor, if any, will have the lower reactor vessel nil-ductility transition temperature, and why?

A. Reactor A, because it has produced more total fissions.

B. Reactor B, because it has produced less total fissions.

C. Both reactors will have approximately the same nil-ductility transition temperature because they have equal average lifetime power capacities.

D. Both reactors will have approximately the same nil-ductility transition temperature because the fission rate in a shutdown reactor is not significant.

ANSWER: B.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B3200 (P3197)

A reactor is shut down for refueling following 18 months of operation at an average power level of 85 percent. During the shutdown, a reactor vessel metal specimen was removed from the reactor vessel for testing. The testing determined that the nil-ductility transition (NDT) temperature of the specimen decreased from 44°F to 42°F since the previous refueling shutdown.

Which one of the following conclusions is warranted?

A. The test results are credible and the reactor vessel is more likely to experience brittle fracture now than after the previous refueling shutdown.

B. The test results are credible and the reactor vessel is less likely to experience brittle fracture now than after the previous refueling shutdown.

C. The test results are questionable because the specimen NDT temperature would not decrease during the described 18-month period of operation.

D. The test results are questionable because the specimen NDT temperature would decrease by more than 2°F during the described 18-month period of operation.

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B3300 (P3297)

A reactor is shut down for refueling following 18 months of operation at an average power level of 85 percent. During the shutdown, a reactor vessel metal specimen was removed from the reactor vessel for testing. The testing determined that the nil-ductility transition (NDT) temperature of the specimen increased from 42°F to 44°F since the previous refueling shutdown.

Which one of the following conclusions is warranted?

A. The test results are credible and the reactor vessel is <u>more</u> susceptible to brittle fracture now than after the previous refueling shutdown.

B. The test results are credible and the reactor vessel is <u>less</u> susceptible to brittle fracture now than after the previous refueling shutdown.

C. The test results are questionable because the vessel NDT temperature would <u>not</u> increase during the described 18-month period of operation.

D. The test results are questionable because the vessel NDT temperature would increase by <u>at least</u> 10°F during the described 18-month period of operation.

ANSWER: A.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B3600 (P3598)

A reactor is shut down for refueling following 18 months of operation at an average power level of 85 percent. During the shutdown, a reactor vessel metal specimen is removed from the reactor vessel for testing. The testing indicates that the nil-ductility transition (NDT) temperature of the specimen has decreased from 44°F to 32°F since the previous refueling shutdown.

Which one of the following conclusions is warranted?

A. The test results are credible and the reactor vessel is more likely to experience brittle fracture now than after the previous refueling shutdown.

B. The test results are credible and the reactor vessel is less likely to experience brittle fracture now than after the previous refueling shutdown.

C. The test results are questionable because the actual specimen NDT temperature would not decrease during the described 18-month period of operation.

D. The test results are questionable because the actual specimen NDT temperature would decrease by much less than indicated by the test results.

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B3900 (P3898)

Two identical reactors are currently shut down for refueling. Reactor A has an average lifetime capacity factor of 90 percent and has been operating for 10 years. Reactor B has an average lifetime capacity factor of 80 percent and has been operating for 15 years.

Which reactor will have the higher reactor vessel nil-ductility transition temperature, and why?

A. Reactor A, because it has the higher average lifetime capacity factor.

B. Reactor B, because it has the lower average lifetime capacity factor.

C. Reactor A, because it has produced significantly less fissions.

D. Reactor B, because it has produced significantly more fissions.

ANSWER: D.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B4250 (P4250)

A reactor is shut down for refueling following 18 months of operation at an average power level of 85 percent. During the shutdown, a reactor vessel metal specimen was removed from the reactor vessel for testing. The tests determined that the nil-ductility transition (NDT) temperature of the specimen increased from 42°F to 72°F since the previous refueling shutdown.

Which one of the following conclusions is warranted?

A. The test results are credible and the reactor vessel is more likely to experience brittle fracture now than after the previous refueling shutdown.

B. The test results are credible and the reactor vessel is less likely to experience brittle fracture now than after the previous refueling shutdown.

C. The test results are questionable because the specimen NDT temperature would not increase during the described 18-month period of operation.

D. The test results are questionable because the specimen NDT temperature would increase by less than indicated during the described 18-month period of operation.

ANSWER: D.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B4450 (P4450)

A reactor is shut down for refueling. During the shutdown, a reactor vessel metal specimen was removed from the reactor vessel for testing. The specimen was last tested six years ago and then returned to its original location in the reactor vessel. During the subsequent six years, the reactor has completed several 18 month fuel cycles with an average power level of 85 percent.

The tests determined that the nil-ductility transition (NDT) temperature of the specimen has remained unchanged at 44°F since it was last tested. Which one of the following conclusions is warranted?

A. The test results are credible, however, the reactor vessel is more susceptible to brittle fracture now than six years ago.

B. The test results are credible, however, the reactor vessel is less susceptible to brittle fracture now than six years ago.

C. The test results are questionable because the specimen NDT temperature should have increased since it was last tested.

D. The test results are questionable because the specimen NDT temperature should have decreased since it was last tested.

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B4650 (P4650)

Two identical reactors are currently shut down for refueling. Reactor A has achieved an average lifetime capacity factor of 60 percent while operating for 12 years. Reactor B has achieved an average lifetime capacity factor of 60 percent while operating for 15 years.

Which reactor, if any, will have the lower reactor vessel nil-ductility transition temperature?

A. Reactor A, because it has produced less total fissions.

B. Reactor B, because it has produced more total fissions.

C. Both reactors will have approximately the same nil-ductility transition temperature because they have equal average lifetime power capacities.

D. Both reactors will have approximately the same nil-ductility transition temperature because the fission rate in a shutdown reactor is not significant.

ANSWER: A.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B5550 (P5550)

Two identical reactors are currently shut down for refueling. Reactor A has an average lifetime capacity factor of 90 percent and has been operating for 24 years. Reactor B has an average lifetime capacity factor of 72 percent and has been operating for 30 years.

Which reactor, if any, will have the lower reactor vessel nil-ductility transition temperature?

A. Reactor A, because it has produced more total fissions.

B. Reactor B, because it has produced less total fissions.

C. Both reactors will have approximately the same nil-ductility transition temperature because fast neutron irradiation in a shutdown reactor is not significant.

D. Both reactors will have approximately the same nil-ductility transition temperature because each reactor has produced approximately the same number of fissions.

ANSWER: D.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B6350 (P6350)

Which one of the following comparisons results in a higher probability for brittle fracture of a reactor vessel?

A. A high fast neutron flux in the reactor rather than a high gamma flux.

B. A high material ductility of the reactor vessel rather than a high material strength.

C. A rapid 100°F reactor heatup at a high temperature rather than at a low temperature.

D. A rapid 100°F reactor cooldown at a high temperature rather than at a low temperature.

ANSWER: A.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B6950 (P6950)

Two identical reactors are currently shut down for refueling. Reactor A has an average lifetime capacity factor of 90 percent and has been operating for 16 years. Reactor B has an average lifetime capacity factor of 80 percent and has been operating for 18 years.

Which reactor, if any, will have the <u>lower</u> reactor vessel nil-ductility transition temperature, and why?

A. Reactor A, due to the higher average lifetime capacity factor.

B. Reactor B, due to the lower average lifetime capacity factor.

C. Both reactors will have approximately the same nil-ductility transition temperature because each reactor has produced approximately the same number of fissions.

D. Both reactors will have approximately the same nil-ductility transition temperature because fast neutron irradiation in a shutdown reactor is <u>not</u> significant.

ANSWER: C.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B7640 (P7640)

Which one of the following comparisons results in a lower probability for brittle fracture of a reactor vessel?

A. A high gamma flux in the reactor rather than a high fast neutron flux.

B. A high material strength of the reactor vessel rather than a high material ductility.

C. A rapid 100°F reactor heatup at a low temperature rather than at a high temperature.

D. A rapid 100°F reactor cooldown at a low temperature rather than at a high temperature.

ANSWER: A.

TOPIC: 293010
KNOWLEDGE: K1.05 [2.5/2.8]
QID: B7830 (P7830)

Two identical reactors are currently shut down for refueling. Reactor A has been operating for 35 years with an average lifetime capacity factor of 90 percent. Reactor B has been operating for 45 years with an average lifetime capacity factor of 75 percent.

Compared to reactor B, reactor A has been exposed to __________ fast neutron irradiation, and has a __________ reactor vessel nil-ductility transition temperature.

A. less; lower

B. less; higher

C. more; lower

D. more; higher

ANSWER: A.