TOPIC: 292005
KNOWLEDGE: K1.01 [3.2/3.3]
QID: B653

A notch movement of a control rod represents a rod travel of __________ inches.

A. 2

B. 3

C. 6

D. 12

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.01 [3.2/3.3]
QID: B854

A control rod is initially at position 16. When the control rod is moved to position 22, it is being...

A. inserted 18 inches.

B. withdrawn 18 inches.

C. inserted 36 inches.

D. withdrawn 36 inches.

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.01 [3.2/3.3]
QID: B1255

A reactor core consists of fuel bundles and control rods that are 12 feet in length. A new rod position is indicated for every 3 inches of rod motion.

If a control rod is inserted 75 percent into the core, it will be located at rod position...

A. 9.

B. 12.

C. 27.

D. 36.

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.01 [3.2/3.3]
QID: B3054

If a control rod is moved from position 22 to position 12, it is being...

A. inserted 30 inches.

B. withdrawn 30 inches.

C. inserted 60 inches.

D. withdrawn 60 inches.

ANSWER: A.

TOPIC: 292005
KNOWLEDGE: K1.01 [3.2/3.3]
K1.11 [2.4/2.5]
QID: B3554

A control rod that was initially at position 06 is being withdrawn three more notches. After the withdrawal, the control rod will be classified as a __________ rod; and the blade tip for this control rod will be positioned 36 inches from the __________ position.

A. shallow; fully inserted

B. shallow; fully withdrawn

C. deep; fully inserted

D. deep; fully withdrawn

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.02 [2.5/2.6]
QID: B754

Which one of the following materials is used in control rods primarily for thermal neutron absorption?

A. Boron

B. Carbon

C. Gadolinium

D. Stainless Steel

ANSWER: A.

TOPIC: 292005
KNOWLEDGE: K1.04 [3.5/3.5]
QID: B54

The reverse power effect (or reverse reactivity effect) occasionally observed when a shallow control rod is withdrawn one or two notches is due to a relatively...

A. small local power decrease due to increased local Doppler effects.

B. small local power decrease due to the shadowing effect of nearby control rods.

C. large local power increase being offset by a void-related power decrease.

D. large local power increase being offset by a moderator temperature-related power decrease.

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.04 [3.5/3.5]
K1.12 [2.6/2.9]
QID: B134

Withdrawal of a deep control rod will <u>significantly</u> affect which one of the following?

A. Axial flux shape

B. Rod shadowing

C. Radial power distribution

D. Reverse power effect

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.04 [3.5/3.5]
QID: B254

A reactor is operating at steady-state 50 percent power. A control rod is inserted a short distance (from 08 to 02 notches). Assuming that recirculation flow remains constant, reactor power will...

A. increase and stabilize at a higher value.

B. increase temporarily, then return to the original value.

C. decrease and stabilize at a lower value.

D. decrease temporarily, then return to the original value.

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.04 [3.5/3.5]
QID: B356

A reactor is initially critical below the point of adding heat with stable reactor vessel temperature and pressure. If control rods are manually inserted for 5 seconds, reactor power will decrease...

A. to a shutdown power level determined by subcritical multiplication.

B. temporarily, then return to the original power level due to the resulting decrease in moderator temperature.

C. until inherent positive reactivity feedback causes the reactor to become critical at a lower power level.

D. temporarily, then return to the original power level due to subcritical multiplication.

ANSWER: A.

TOPIC: 292005
KNOWLEDGE: K1.04 [3.5/3.5]
QID: B755 (P754)

A reactor is initially critical below the point of adding heat (POAH) during a reactor startup. If control rods are manually withdrawn for 5 seconds, reactor power will...

A. increase to a stable critical power level below the POAH.

B. increase temporarily, then decrease and stabilize at the original value.

C. increase to a stable critical power level at the POAH.

D. increase temporarily, then decrease and stabilize below the original value.

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.04 [3.5/3.5]
QID: B954 (P1955)

A reactor has been shut down for three weeks with all control rods fully inserted. If a center control rod is fully withdrawn from the core, neutron flux level will… (Assume the reactor remains subcritical.)

A. remain the same.

B. increase and stabilize at a new higher level.

C. increase temporarily then return to the original level.

D. increase exponentially until the operator reinserts the center control rod.

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.04 [3.5/3.5]
QID: B1954

During a reactor startup:

- Reactor power is stable at the point of adding heat,
- The main steam isolation valves are open,
- Reactor vessel pressure is stable at 600 psig, and
- The steam bypass system pressure setpoint is 920 psig.

Then, control rods are manually withdrawn for 5 seconds. When conditions stabilize, reactor power will be __________; and reactor vessel pressure will be __________. (Assume the reactor does not scram.)

A. higher; the same

B. higher; higher

C. the same; the same

D. the same; higher

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.04 [3.5/3.5]
QID: B2155 (P1854)

A reactor has been shut down for three weeks with all control rods fully inserted. If a single control rod is fully withdrawn from the core, neutron flux level will… (Assume the reactor remains subcritical.)

A. increase and stabilize above the original level.

B. increase, then decrease and stabilize at the original level.

C. increase, then decrease and stabilize above the original level.

D. remain the same during and after the withdrawal.

ANSWER: A.

TOPIC: 292005
KNOWLEDGE: K1.04 [3.5/3.5]
QID: B2254

A reactor is critical below the point of adding heat (POAH) during a hot reactor startup in the middle of a fuel cycle. Control rods are withdrawn for 20 seconds to establish a positive 30-second reactor period.

In response to the control rod withdrawal, reactor power will increase...

A. continuously until control rods are reinserted.

B. and stabilize at a level slightly below the POAH.

C. temporarily, and then stabilize at the original level.

D. and stabilize at a level equal to or above the POAH.

ANSWER: D.

TOPIC: 292005
KNOWLEDGE: K1.04 [3.5/3.5]
QID: B2554

A reactor is operating steady-state at the point of adding heat (POAH) during a reactor startup near the beginning of a fuel cycle. Reactor pressure is stable at 600 psig and the main steam isolation valves are closed. There is a small but significant heat loss from the reactor vessel to the surroundings.

If a control rod is manually inserted for 5 seconds and the reactor does <u>not</u> scram, when conditions stabilize reactor power will be __________; and reactor vessel pressure will be __________.

A. at the POAH; 600 psig

B. at the POAH; less than 600 psig

C. less than the POAH; 600 psig

D. less than the POAH; less than 600 psig

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.04 [3.5/3.5]
QID: B3856

Criticality has been achieved during a xenon-free reactor startup with core neutron flux level low in the intermediate range. A stable positive 60-second reactor period has been established. Now the operator begins inserting control rods in an effort to stabilize the core neutron flux level near its current value. The operator stops inserting control rods exactly when the reactor period indicates infinity.

Immediately after the operator stops inserting the control rods, the reactor period will become __________; and the core neutron flux level will __________.

A. positive; increase exponentially

B. positive; increase linearly

C. negative; decrease exponentially

D. negative; decrease linearly

ANSWER: A.

TOPIC: 292005
KNOWLEDGE: K1.05 [2.5/2.6]
QID: B555

Rod density is a measure of the total number of control rod notches __________ the core divided by the total number of control rod notches __________ the core.

A. inserted into; available in

B. inserted into; withdrawn from

C. withdrawn from; available in

D. withdrawn from; inserted into

ANSWER: A.

TOPIC: 292005
KNOWLEDGE: K1.05 [2.5/2.6]
QID: B955

How is control rod density affected as control rods are inserted during a reactor shutdown?

A. Increases continuously during rod insertion.

B. Decreases continuously during rod insertion.

C. Increases initially, then decreases after 50 percent of the rods are inserted.

D. Decreases initially, then increases after 50 percent of the rods are inserted.

ANSWER: A.

TOPIC: 292005
KNOWLEDGE: K1.05 [2.5/2.6]
QID: B1055

Control rod density is a measure of the...

A. percentage of control rods inserted into the core.

B. percentage of control rods withdrawn from the core.

C. number of control rods fully inserted divided by the number of control rods fully withdrawn.

D. number of control rods fully withdrawn divided by the number of control rods fully inserted.

ANSWER: A.

TOPIC: 292005
KNOWLEDGE: K1.05 [2.5/2.6]
QID: B1355

During a reactor startup, as control rods are being withdrawn, control rod density...

A. decreases until 50 percent of the rods are withdrawn, then increases.

B. increases until 50 percent of the rods are withdrawn, then decreases.

C. decreases whenever any of the rods are withdrawn.

D. increases whenever any of the rods are withdrawn.

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.07 [2.5/2.6]
QID: B756 (P755)

A control rod is positioned in a reactor with the following neutron flux parameters:

Core average thermal neutron flux = $1 \times 10^{12}$ neutrons/cm$^2$-sec
Control rod tip thermal neutron flux = $5 \times 10^{12}$ neutrons/cm$^2$-sec

If the control rod is slightly withdrawn such that the tip of the control rod is located in a thermal neutron flux of $1 \times 10^{13}$ neutrons/cm$^2$-sec, the differential control rod worth will increase by a factor of __________. (Assume the core average thermal neutron flux is constant.)

A. 0.5

B. 1.4

C. 2.0

D. 4.0

ANSWER: D.

TOPIC: 292005
KNOWLEDGE: K1.07 [2.4/2.6]
QID: B856 (P555)

The total amount of reactivity added by a control rod position change from a reference height to any other rod height is called...

A. differential rod worth.

B. excess reactivity.

C. integral rod worth.

D. reference reactivity.

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.07 [2.4/2.6]
QID: B1057 (P1554)

A control rod is positioned in a reactor with the following neutron flux parameters:

Core average thermal neutron flux = $1.0 \times 10^{12}$ n/cm$^2$-sec
Control rod tip thermal neutron flux = $5.0 \times 10^{12}$ n/cm$^2$-sec

If the control rod is slightly inserted such that the control rod tip is located in a thermal neutron flux of $1.0 \times 10^{13}$ n/cm$^2$-sec, the differential control rod worth will increase by a factor of __________. (Assume the core average thermal neutron flux is constant.)

A. 2

B. 4

C. 10

D. 100

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.07 [2.4/2.6]
QID: B1555

As a control rod is withdrawn from notch position 00 to notch position 48, the absolute value of integral rod worth will...

A. decrease, then increase.

B. increase, then decrease.

C. decrease continuously.

D. increase continuously.

ANSWER: D.

TOPIC: 292005
KNOWLEDGE: K1.07 [2.4/2.6]
QID: B1657 (P1555)

Which one of the following expresses the relationship between differential rod worth (DRW) and integral rod worth (IRW)?

A. IRW is the slope of the DRW curve.

B. IRW is the inverse of the DRW curve.

C. IRW is the sum of the DRWs between the initial and final control rod positions.

D. IRW is the sum of the DRWs of all control rods at a specific control rod position.

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.07 [2.4/2.6]
QID: B1755 (P134)

Which one of the following expresses the relationship between differential rod worth (DRW) and integral rod worth (IRW)?

A. DRW is the area under the IRW curve at a given rod position.

B. DRW is the slope of the IRW curve at a given rod position.

C. DRW is the IRW at a given rod position.

D. DRW is the square root of the IRW at a given rod position.

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.07 [2.4/2.6]
QID: B1855 (P1755)

A control rod is positioned in a reactor with the following neutron flux parameters:

Core average thermal neutron flux = $1.0 \times 10^{12}$ n/cm$^2$-sec
Control rod tip thermal neutron flux = $4.0 \times 10^{12}$ n/cm$^2$-sec

If the control rod is slightly inserted such that the control rod tip is located in a thermal neutron flux of $1.2 \times 10^{13}$ n/cm$^2$-sec, the differential control rod worth will increase by a factor of __________. (Assume the core average thermal neutron flux is constant.)

A. 1/3

B. 3

C. 9

D. 27

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.07 [2.4/2.6]
QID: B1955

Which one of the following describes the change in magnitude (positive value) of integral rod worth during the complete withdrawal of a fully inserted control rod?

A. Increases, then decreases.

B. Decreases, then increases.

C. Increases continuously.

D. Decreases continuously.

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.07 [2.4/2.6]
QID: B2055

Which one of the following describes the change in magnitude (absolute value) of differential control rod worth during the complete withdrawal of a fully inserted control rod?

A. Increases, then decreases.

B. Decreases, then increases.

C. Increases continuously.

D. Decreases continuously.

ANSWER: A.

TOPIC: 292005
KNOWLEDGE: K1.07 [2.4/2.6]
QID: B2255 (P655)

Which one of the following parameters typically has the greatest influence on the shape of a differential rod worth curve?

A. Core radial neutron flux distribution

B. Core axial neutron flux distribution

C. Core xenon distribution

D. Burnable poison distribution

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.07 [2.4/2.6]
QID: B2655 (P2554)

A control rod is positioned in a reactor with the following neutron flux parameters:

Core average thermal neutron flux = $1.0 \times 10^{12}$ n/cm$^2$-sec
Control rod tip thermal neutron flux = $4.0 \times 10^{12}$ n/cm$^2$-sec

If the control rod is slightly inserted such that the control rod tip is located in a thermal neutron flux of $1.6 \times 10^{13}$ n/cm$^2$-sec, the differential control rod worth will increase by a factor of ___________. (Assume the core average thermal neutron flux is constant.)

A. 2

B. 4

C. 8

D. 16

ANSWER: D.

TOPIC: 292005
KNOWLEDGE: K1.07 [2.4/2.6]
QID: B2755 (P1354)

Integral rod worth is the...

A. change in reactivity per unit change in rod position.

B. rod worth associated with the most reactive control rod.

C. change in worth of a control rod per unit change in reactor power.

D. reactivity added by moving a control rod from a reference point to another point.

ANSWER: D.

TOPIC: 292005
KNOWLEDGE: K1.07 [2.4/2.6]
QID: B2856

During normal full power operation, the differential control rod worth is small near the top and bottom of the core compared to the center regions due to the effects of...

A. fuel enrichment.

B. neutron flux distribution.

C. xenon concentration.

D. fuel temperature distribution.

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.07 [2.4/2.6]
QID: B2956

A reactor is operating at steady-state 50 percent power near the end of a fuel cycle with all control systems in manual. The radial power distribution is symmetric and peaked in the center of the core, and the axial power distribution is peaked slightly below the core midplane.

The tip of the most centrally-located control rod is currently located at the core midplane. The control rod is constructed of a homogeneous neutron absorber and the active neutron absorber length is exactly as long as the adjacent fuel assembly. The rod is manually <u>inserted</u> fully into the core, and reactor power stabilizes at 42 percent.

If, instead, the control rod had been <u>withdrawn</u> fully from its core midplane position, the reactor would have experienced**...**

A. a larger absolute change in integral control rod reactivity.

B. a smaller absolute change in integral control rod reactivity.

C. a larger absolute change in reactor shutdown margin.

D. a smaller absolute change in reactor shutdown margin.

ANSWER: A.

TOPIC: 292005
KNOWLEDGE: K1.09 [2.5/2.6]
QID: B53

Which one of the following statements describes how changes in core parameters affect control rod worth (CRW)?

A. CRW increases with an increase in void fraction.

B. CRW increases with an increase in fast neutron flux.

C. CRW decreases when approaching the end of a fuel cycle.

D. CRW decreases when the temperature of the fuel decreases.

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.09 [2.5/2.6]
QID: B357

If the void fraction surrounding several centrally located fuel bundles increases, the worth of the associated control rods will...

A. decrease, because the average neutron energy in the fuel bundles will decrease, resulting in fewer neutrons traveling from within the fuel bundles to the affected control rods.

B. decrease, because more neutrons will be resonantly absorbed in the fuel while they are slowing down, resulting in fewer thermal neutrons available to be absorbed by the affected control rods.

C. increase, because the diffusion length of the thermal neutrons will increase, resulting in more thermal neutrons traveling from within the fuel bundles to the affected control rods.

D. increase, because neutrons will experience a longer slowing down length, resulting in a smaller fraction of thermal neutrons being absorbed by the fuel and more thermal neutrons available to be absorbed by the affected control rods.

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.09 [2.5/2.6]
QID: B1157

Which one of the following conditions will cause the associated differential control rod worth(s) to become more negative? (Consider only the direct effect of the indicated changes.)

A. During a small power change, fuel temperature increases.

B. With the reactor shut down, reactor coolant temperature increases from 100°F to 200°F.

C. During a small power change, the percentage of voids increases.

D. During a control pattern adjustment, the local thermal neutron flux surrounding a control rod decreases while the core average thermal neutron flux remains the same.

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.09 [2.5/2.6]
QID: B1556

If the void fraction surrounding several centrally located fuel bundles decreases, the worth of the associated control rods will...

A. increase, because the average neutron energy in the area of the affected control rods increases.

B. increase, because fewer neutrons are resonantly absorbed in the fuel while they are being thermalized, resulting in more thermal neutrons available to be absorbed by the affected control rods.

C. decrease, because the diffusion length of the thermal neutrons decreases, resulting in fewer thermal neutrons reaching the affected control rods.

D. decrease, because neutrons will experience a shorter slowing down length, resulting in a larger fraction of thermal neutrons being absorbed by the fuel and fewer thermal neutrons available to be absorbed by the affected control rods.

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.09 [2.5/2.6]
QID: B2656 (P1556)

As moderator temperature increases, the differential rod worth becomes...

A. more negative due to longer neutron diffusion lengths.

B. more negative due to decreased resonance absorption of neutrons.

C. less negative due to reduced moderation of neutrons.

D. less negative due to decreased moderator absorption of neutrons.

ANSWER: A.

TOPIC: 292005
KNOWLEDGE: K1.09 [2.5/2.6]
QID: B2857

A reactor is operating at 85 percent power with control rod X-Y inserted 20 percent. Which one of the following will cause the differential rod worth of control rod X-Y to become more negative? (Assume that control rod X-Y remains 20 percent inserted for each case.)

A. Core Xe-135 builds up in the lower half of the core.

B. An adjacent control rod is fully withdrawn from the core.

C. Reactor vessel pressure drifts from 900 psig to 880 psig.

D. Fuel temperature increases as fission product gases accumulate in nearby fuel rods.

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.10
QID: B179

Which one of the following is a reason for neutron flux shaping?

A. To minimize the worth of individual control rods by evenly distributing the flux radially.

B. To reduce the reverse power effect during rod withdrawal by peaking the flux at the top of the core.

C. To equalize control rod drive mechanism wear and control rod burnup.

D. To increase the effectiveness of the power control rods by peaking the flux at the bottom of the core.

ANSWER: A.

TOPIC: 292005
KNOWLEDGE: K1.10 [2.8/3.3]
QID: B255

Neutron flux shaping within a reactor core is designed to...

A. prevent the effects of rod shadowing during control rod motion.

B. generate more power in the top portion of the core early in core life.

C. ensure that local core thermal power limits are not exceeded.

D. minimize the reverse power effect during control rod motion.

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.10 [2.8/3.3]
QID: B1557

Which one of the following is a reason for neutron flux shaping?

A. To minimize local power peaking by more evenly distributing the core thermal neutron flux.

B. To reduce the reverse power effect during rod withdrawal by peaking the thermal neutron flux at the top of the core.

C. To equalize control rod drive mechanism wear and control rod burnup.

D. To increase control rod worth by peaking the thermal neutron flux at the bottom of the core.

ANSWER: A.

TOPIC: 292005
KNOWLEDGE: K1.10 [2.8/3.3]
QID: B1656

The primary purpose for performing control rod program changes is to...

A. evenly burn up the fuel.

B. evenly burn up the control rods.

C. reduce excessive localized reactor vessel neutron irradiation.

D. reduce control rod shadowing.

ANSWER: A.

TOPIC: 292005
KNOWLEDGE: K1.10 [2.8/3.3]
QID: B2457 (P2456)

Which one of the following is a reason for neutron flux shaping in a reactor core?

A. To minimize local power peaking by more evenly distributing the core thermal neutron flux.

B. To reduce thermal neutron leakage by decreasing the neutron flux at the periphery of the reactor core.

C. To reduce the size and number of control rods needed to shut down the reactor during a reactor scram.

D. To increase differential control rod worth by peaking the thermal neutron flux at the top of the reactor core.

ANSWER: A.

TOPIC: 292005
KNOWLEDGE: K1.10 [2.8/3.3]
QID: B3356 (P857)

The main reason for designing and operating a reactor with a flattened neutron flux distribution is to...

A. provide even burnup of control rods.

B. reduce neutron leakage from the core.

C. achieve a higher average power density.

D. provide more accurate nuclear power indication.

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.11 [2.4/2.5]
QID: B557

A control rod located at notch position __________ in the core would be considered a __________ control rod.

A. 36; deep

B. 36; intermediate

C. 12; intermediate

D. 12; deep

ANSWER: D.

TOPIC: 292005
KNOWLEDGE: K1.12 [2.6/2.9]
QID: B358 (P356)

A reactor is operating at steady-state 100 percent power when a single control rod fully inserts from the fully withdrawn position. After the initial transient, the operator returns the reactor to 100 percent power with the control rod still fully inserted.

Compared to the initial axial neutron flux shape, the current axial neutron flux shape will have a...

A. minor distortion, because a fully inserted control rod has zero reactivity worth.

B. minor distortion, because the fully inserted control rod is an axially uniform poison.

C. major distortion, because the upper and lower core halves are loosely coupled.

D. major distortion, because power production along the length of the rod drastically decreases.

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.12 [2.6/2.9]
QID: B454

Which one of the following control rods, when repositioned by 2 notches, will have the greatest effect on the axial neutron flux shape?

A. Deep rod at the center of the core.

B. Deep rod at the periphery of the core.

C. Shallow rod at the center of the core.

D. Shallow rod at the periphery of the core.

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.12 [2.6/2.9]
QID: B656

During reactor power operations, the axial neutron flux shape is affected most by withdrawal of __________ control rods; and the radial neutron flux shape is affected most by withdrawal of __________ control rods.

A. shallow; shallow

B. deep; shallow

C. shallow; deep

D. deep; deep

ANSWER: C

TOPIC: 292005
KNOWLEDGE: K1.12 [2.6/2.9]
QID: B1357

During reactor power operations, the radial neutron flux shape is affected most by the withdrawal of __________ control rods.

A. shallow

B. deep

C. peripheral

D. intermediate

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.12 [2.6/2.9]
QID: B1457

A reactor is operating at 60 percent power with thermal neutron flux peaked in the bottom half of the core. Partial withdrawal of a deep control rod will primarily affect total (versus local) core power because __________ is relatively high in the area of withdrawal.

A. fuel enrichment

B. thermal neutron flux

C. void content

D. moderator temperature

ANSWER: C.

TOPIC: 292005
KNOWLEDGE: K1.12 [2.6/2.9]
QID: B1757

Which one of the following control rods, when repositioned by 2 notches, will have the smallest effect on the axial neutron flux shape?

A. Deep rods at the center of the core

B. Deep rods at the periphery of the core

C. Shallow rods at the center of the core

D. Shallow rods at the periphery of the core

ANSWER: B.

TOPIC: 292005
KNOWLEDGE: K1.12 [2.6/2.9]
QID: B1856

A reactor is operating at 50 percent power at the beginning of a fuel cycle. Which one of the following compares the effects of dropping a deep control rod out of the core to the effects of dropping the same control rod if it is shallow? (Assume the reactor does <u>not</u> scram.)

A. Dropping a deep control rod causes a greater change in shutdown margin.

B. Dropping a deep control rod causes a smaller change in shutdown margin.

C. Dropping a deep control rod causes a greater change in axial power distribution.

D. Dropping a deep control rod causes a greater change in radial power distribution.

ANSWER: D.