科目： 292004
知能類： K1.01 [3.2/3.2]
序號： B252

The moderator temperature coefficient describes a change in _____ resulting from a change in _____.
A. reactivity; moderator temperature
B. K_{eff}; moderator temperature
C. moderator temperature; reactivity
D. moderator temperature; K_{eff}
ANSWER: A.

緩和劑溫度係數是描述因_____變化而產生的_____變化。
A. 緩和劑溫度；反應度
B. 緩和劑溫度；K_{eff}
C. 反應度；緩和劑溫度
D. 緩和劑溫度；K_{eff}
答案： A.

科目： 292004
知能類： K1.02 [2.5/2.6]
序號： B353 (P350)

Which one of the following will directly result in a less negative fuel temperature coefficient? (Consider only the effect of the change in the listed parameters.)
A. Increase in fuel burnup
B. Decrease in fuel temperature
C. Increase in void fraction
D. Decrease in moderator temperature
ANSWER: D.

下列何者會直接導致一較小的負燃料溫度係數？（只考慮所列參數變化產生的直接影響。）
A. 燃料燃耗的增加
B. 燃料溫度的降低
C. 空泡分率的增加
D. 緩和劑溫度的降低
答案： D.

科目： 292004
知能類： K1.02 [2.5/2.6]
序號： B651 (P751)

A reactor is currently at end-of-life in its fuel cycle, and it will be refueled next month. In comparison to the current moderator temperature coefficient （MTC）, the MTC after refueling will be...

A. less negative at all coolant temperatures.
B. more negative at all coolant temperatures.
C. less negative below approximately 350 ^{o}F coolant temperature and more negative above approximately 350 ^{o}F coolant temperature.
D. more negative below approximately 350 ^{o}F coolant temperature and less negative above approximately 350 ^{o}F coolant temperature.

ANSWER: B.

一反應器目前處於燃料週期的末期，下個月將會更換燃料。與目前緩和劑溫度係數（MTC）相比較，更換燃料之後的MTC將會

A. 在所有的冷卻水溫度下，負值均較小
B. 在所有的冷卻水溫度下，負值均較大
C. 在冷卻水溫度約350°F以下時，負值較小；在冷卻水溫度約350°F以上時，負值較大
D. 在冷卻水溫度約350°F以下時，負值較大；在冷卻水溫度約350°F以上時，負值較小

答案： B.

科目： 292004
知能類： K1.02 [2.5/2.6]
序號： B752 (N/A)

A reactor is operating at full power following a refueling outage. In comparison to the current moderator temperature coefficient （MTC）, the MTC just prior to the refueling was...

A. more negative below approximately 350^{o}F coolant temperature and less negative above approximately 350^{o}F coolant temperature.
B. less negative below approximately 350^{o}F coolant temperature and more negative above approximately 350^{o}F coolant temperature.
C. more negative at all coolant temperatures.
D. less negative at all coolant temperatures.

ANSWER: D.

一反應器在大修後於全功率下運轉。與目前的緩和劑溫度係數（MTC）相較，更換燃料前的MTC

A. 在冷卻水溫度約350^{o}F以下時，負值較大；在冷卻水溫度約350^{o}F以上時，負值較小
B. 在冷卻水溫度約350^{o}F以下時，負值較小；在冷卻水溫度約350^{o}F以上時，負值較大
C. 在所有的冷卻水溫度下，負值均較大
D. 在所有的冷卻水溫度下，負值均較小

答案： D.

科目： 292004
知能類： K1.02 [2.5/2.6]
序號： B852

Which one of the following conditions will cause the moderator temperature coefficient （MTC） to become more negative? (Consider only the direct effect of the indicated change on MTC.)
A. Control rods are inserted from 50% rod density to 75% rod density.
B. Fuel temperature decreases from 1500^{o}F to 1200^{o}F.
C. Recirculation flow increases by 10%.
D. Moderator temperature decreases from 500^{o}F to 450^{o}F.
ANSWER: A.

下列何種情況將會導致緩和劑溫度係數（MTC）變成較大負值？（只考慮下列因素對於MTC所產生的直接影響。）
A. 控制棒插入密度從50%增加到75%
B. 燃料溫度從1500^{o}F降低至1200^{o}F
C. 再循環流量增加10%
D. 緩和劑溫度從500^{o}F降低至450^{o}F
答案： A.

科目： 292004
知能類： K1.02 [2.5/2.6]
序號： B1152

Which one of the following describes the change in the moderator temperature coefficient （MTC） of reactivity over core life? (Assume 100% power for all cases.)

A. Control rod withdrawal results in increased thermal neutron utilization, which results in a less negative MTC at end of fuel cycle （EOC）.
B. Fission product poison buildup results in decreased thermal neutron utilization, which results in a more negative MTC at EOC.
C. Burnup of U-235 results in decreased thermal neutron utilization, which results in a more negative MTC at EOC.
D. Decreased voiding in the core results in increased thermal neutron utilization, which results in a less negative MTC at EOC.

ANSWER: A.

下列何者正確地描述了在爐心壽命中緩和劑溫度係數（MTC）的變化？（假設所有情況均為100%功率。）

A. 抽控制棒會增加熱中子利用因數，因而導致了在燃料週期末期（EOC）時MTC的負值較小
B. 分裂產物毒物累積會降低熱中子利用因數，因而導致了在EOC時MTC的負值較大
C. U-235燃耗會降低熱中子利用因數，因而導致了在EOC時MTC的負值較大
D. 爐心空泡減少會增加熱中子利用因數，因而導致了在EOC時MTC的負值較小

答案： A.

科目： 292004
知能類： K1.02 [2.5/2.6]
序號： B1253

The moderator temperature coefficient of reactivity is _____ negative at end of core life because, over core life, the utilization of thermal neutrons _____.
A. more; decreases
B. less; decreases
C. more; increases
D. less; increases
ANSWER: D.

緩和劑溫度係數在爐心壽命末期時負值_____，因為在爐心壽命過程中，熱中子利用因數_____。
A. 較大；降低
B. 較小；降低
C. 較大；增加
D. 較小；增加
答案： D.

科目： 292004
知能類： K1.02 [2.5/2.6]
序號： B1752 (P1752)

Which one of the following describes the net reactivity effect of a decrease in moderator temperature in an undermoderated reactor core?

A. Negative reactivity will be added because more thermal neutrons will be captured by the moderator.
B. Negative reactivity will be added because more neutron leakage will occur.
C. Positive reactivity will be added because less neutron leakage will occur.
D. Positive reactivity will be added because less thermal neutrons will be captured by the moderator.

ANSWER: C.

下列何者正確地描述了在一欠緩和（undermoderated）反應器爐心中，因緩和劑溫度下降而造成淨反應度的影響？

A. 會加入負反應度，因為更多的熱中子將被緩和劑捕獲
B. 會加入負反應度，因為更多的中子洩漏將會發生
C. 會加入正反應度，因為較少的中子洩漏將會發生
D. 會加入正反應度，因為較少的熱中子將被緩和劑捕獲

答案： C.

科目： 292004
知能類： K1.02 [2.5/2.6]
序號： B2052 (N/A)

A reactor is shut down with the reactor vessel head removed for refueling. The core is covered by 23 feet of water with a temperature of 100^{o}F.
Which one of the following can both increase and decrease Keff depending on core burnup?
A. A spent fuel assembly is removed from the core.
B. Refueling water temperature decreases to 95^{o}F.
C. A fresh neutron source is installed in the core.
D. Movable incore source range instrumentation is repositioned to increase source range count rate.
ANSWER: B.

一反應器將反應爐槽蓋取下，進行更換燃料而停機。爐心以溫度100°F深度23呎的水覆蓋。根據爐心燃耗的不同，下列何者既能增加亦能降低K_{eff}？
A. 從爐心移出一用過的燃料束。
B. 更換燃料水溫降低至95°F。
C. 於爐心中安裝一新的中子源。
D. 可移動式爐內（incore）源階（source range）中子偵測儀器重新定位，以增加源階內的計數率。
答案： B.

科目： 292004
知能類： K1.02 [2.5/2.6]
序號： B2252 (N/A)

Under which one of the following conditions is a reactor core most likely to have a positive moderator temperature coefficient?
A. Low coolant temperature at beginning-of-life
B. Low coolant temperature at end-of-life
C. High coolant temperature at beginning-of-life
D. High coolant temperature at end-of-life
ANSWER: B.

在下列何種情況下，反應器爐心最可能有一正的緩和劑溫度係數？
A. 在壽命初期時冷卻水溫度低
B. 在壽命末期時冷卻水溫度低
C. 在壽命初期時冷卻水溫度高
D. 在壽命末期時冷卻水溫度高
答案： B.

科目： 292004
知能類： K1.02 [2.5/2.6]
序號： B2452 (P951)

During a reactor vessel cooldown, positive reactivity is added to the core (assuming a negative moderator temperature coefficient). This is partially due to...
A. a decrease in the thermal utilization factor.
B. an increase in the thermal utilization factor.
C. a decrease in the resonance escape probability.
D. an increase in the resonance escape probability.
ANSWER: D.

在反應爐槽冷卻時，正反應度被加入爐心當中（假設緩和劑溫度係數為負值）。部分原因是因為
A. 熱中子利用因數（thermal utilization factor）下降
B. 熱中子利用因數增加
C. 共振逃逸機率（resonance escape probability）下降
D. 共振逃逸機率增加
答案： D.

科目： 292004
知能類： K1.02 [2.5/2.6]
序號： B2652 (P2650)

Which one of the following describes the net reactivity effect of a moderator temperature decrease in an overmoderated reactor core?
A. Negative reactivity will be added because more neutron leakage will occur.
B. Negative reactivity will be added because more neutrons will be captured by the moderator.
C. Positive reactivity will be added because less neutron leakage will occur.
D. Positive reactivity will be added because fewer neutrons will be captured by the moderator.
ANSWER: B.

下列何者正確地描述了在一過緩和（overmoderated）反應器爐心中，因緩和劑溫度下降而造成淨反應度的影響？
A. 會加入負反應度，因為更多的中子洩漏將會發生
B. 會加入負反應度，因為更多的熱中子將被緩和劑捕獲
C. 會加入正反應度，因為較少的中子洩漏將會發生
D. 會加入正反應度，因為較少的熱中子將被緩和劑捕獲
答案： B.

科目： 292004
知能類： K1.02 [2.5/2.6]
序號： B2853

Which one of the following describes the change in the moderator temperature coefficient （MTC）of reactivity over core life? (Assume 100% power for all cases.)

A. MTC becomes less negative because as control rods are withdrawn from the core, the increase in the number of neutrons leaking from the core for a 1^{o}F increase in moderator temperature is smaller.
B. MTC becomes less negative because as U-238 depletes, a 1^{o}F increase in moderator temperature results in fewer neutrons escaping resonance capture.
C. MTC becomes more negative because as U-235 depletes, a 1^{o}F increase in moderator temperature permits more neutrons to leak out of the core.
D. MTC becomes more negative because as fission product poisons build up, the increase in the number of neutrons being absorbed by fission product poisons for a 1^{o}F increase in moderator temperature is larger.

ANSWER: A.

下列何者正確地描述了在爐心壽命中，緩和劑溫度係數（MTC）的變化？(假設所有情況功率均為100%)

A. 當控制棒被抽出時，緩和劑溫度增加1°F造成中子洩漏數目的增加量會變得比較小，因此MTC負值會變少。
B. 當U-238消耗時，緩和劑溫度增加1°F導致中子逃離共振捕獲的數量會變得比較少，因此MTC負值會變少。
C. 當U-235消耗時，緩和劑溫度增加1°F導致中子從爐心洩漏的數量變得比較多，因此MTC負值會變多。
D. 當分裂產物毒物累積時，緩和劑溫度增加1°F造成被分裂產物毒物吸收中子數目的增加量會變得比較大，因此MTC負值會變多。

答案： A.

科目： 292004
知能類： K1.02 [2.5/2.6]
序號： B2952 (P2950)

Which one of the following describes the net reactivity effect of a moderator temperature increase in an overmoderated reactor core?
A. Negative reactivity will be added because more neutron leakage will occur.
B. Negative reactivity will be added because more neutrons will be captured by the moderator.
C. Positive reactivity will be added because less neutron leakage will occur.
D. Positive reactivity will be added because fewer neutrons will be captured by the moderator.
ANSWER: D.

下列何者正確地描述了在一過緩和（overmoderated）反應器爐心中，緩和劑溫度增加的淨反應度效應？
A. 會加入負反應度，因為更多的中子洩漏將會發生
B. 會加入負反應度，因為更多的熱中子將被緩和劑捕獲
C. 會加入正反應度，因為較少的中子洩漏將會發生
D. 會加入正反應度，因為較少的熱中子將被緩和劑捕獲
答案： D.

科目： 292004
知能類： K1.02 [2.5/2.6]
序號： B3152 (P3151)

How does control rod withdrawal affect the moderator temperature coefficient in an undermoderated reactor core?
A. The initially negative MTC becomes more negative.
B. The initially negative MTC becomes less negative.
C. The initially positive MTC becomes more positive.
D. The initially positive MTC becomes less positive.
ANSWER: B.

在一欠緩和（undermoderated）反應器爐心中，抽控制棒對緩和劑溫度係數的影響為
A. 原本為負值的MTC，負值變多。
B. 原本為負值的MTC，負值變少。
C. 原本為正值的MTC，負值變多。
D. 原本為正值的MTC，負值變少。
答案： B.

科目： 292004
知能類： K1.02 [2.5/2.6]
序號： B3652 (P3650)

Which one of the following describes the overall core reactivity effect of a moderator temperature increase in an undermoderated reactor core?

A. Negative reactivity will be added because more neutrons will be absorbed by U-238 at resonance energies while slowing down.
B. Negative reactivity will be added because more neutrons will be captured by the moderator while slowing down.
C. Positive reactivity will be added because fewer neutrons will be absorbed by U-238 at resonance energies while slowing down.
D. Positive reactivity will be added because fewer neutrons will be captured by the moderator while slowing down.

ANSWER: A.

在一欠緩和（undermoderated）反應器爐心中，下列何者正確地描述了緩和劑溫度增加對整體爐心反應度的效應？

A. 會加入負反應度，因為更多的中子在減速時將會被U-238在共振能量下吸收
B. 會加入負反應度，因為更多的中子在減速時將會被緩和劑捕獲
C. 會加入正反應度，因為較少的中子在減速時將會被U-238在共振能量下吸收
D. 會加入正反應度，因為較少的中子在減速時將會被緩和劑捕獲

答案： A.

科目： 292004
知能類： K1.03 [2.6/2.7]
序號： B753 (P1950)

Factors that affect resonance absorption of a neutron into a nucleus include...
A. kinetic energy of the nucleus, kinetic energy of the neutron, and excitation energy of the nucleus.
B. kinetic energy of the neutron, excitation energy of the nucleus, and excitation energy of the neutron.
C. excitation energy of the nucleus, excitation energy of the neutron, and kinetic energy of the nucleus.
D. excitation energy of the neutron, kinetic energy of the nucleus, and kinetic energy of the neutron.
ANSWER: A.

影響中子被原子核共振吸收的因素包括
A. 原子核的動能，中子的動能，和原子核的激動能量
B. 中子的動能，原子核的激動能量，和中子的激動能量
C. 原子核的激動能量，中子的激動能量，和原子核的動能
D. 中子的激動能量，原子核的動能，和中子的動能
答案： A.

科目： 292004
知能類： K1.03 [2.6/2.7]
序號： B1052

As fuel temperature increases, the effective resonant absorption peaks exhibited by U-238 will _____ in height and will _____ in width.
A. decrease; increase
B. decrease; decrease
C. increase; increase
D. increase; decrease
ANSWER: A.

當燃料溫度增加時，U-238的有效共振吸收峰（effective resonance absorption peak）在高度上會_____在寬度上會_____。
A. 減小；增加
B. 減小；減小
C. 增加；增加
D. 增加；減小
答案： A.

科目： 292004
知能類： K1.03 [2.6/2.7]
序號： B3153 (P3150)

Which one of the following exhibits the smallest microscopic cross section for absorption of a thermal neutron in an operating reactor?
A. Uranium-235
B. Uranium-238
C. Samarium-149
D. Xenon-135
ANSWER: B.

在一運轉中的反應器內，下列何者具有最小的熱中子微觀吸收截面（microscopic absorption cross section）？
A. U-235
B. U-238
C. Sm-149
D. Xe-135
答案： B.

科目： 292004
知能類： K1.04 [2.6/2.7]
序號： B652 (P1650)

Which one of the following contains the pair of nuclides that are the most significant contributors to the total resonance capture in the core near the end of a fuel cycle?
A. Pu-239 and U-235
B. Pu-239 and Pu-240
C. U-238 and Pu-240
D. U-238 and Pu-239
ANSWER: C.

對於一接近燃料週期末期時的爐心，下列何組核種是所有共振捕獲的最重要貢獻者？
A. Pu-239 和 U-235
B. Pu-239 和 Pu-240
C. U-238 和 Pu-240
D. U-238 和 Pu-239
答案： C.

科目： 292004
知能類： K1.04 [2.6/2.7]
序號： B1553 (P1951)

A reactor plant is operating at 70% power. Which one of the following will result in a less negative fuel temperature coefficient? (Consider only the direct effect of the change in each listed parameter.)
A. Increase in Pu-240 inventory in the core
B. Increase in moderator temperature
C. Increase in fuel temperature
D. Increase in void fraction
ANSWER: C.

一反應器於70%功率下運轉。下列何者將會使得燃料溫度係數的負值減小？（只考慮下列各參數變化的直接效應。）
A. 在爐心中增加Pu-240的含量
B. 提高緩和劑溫度
C. 提高燃料溫度
D. 提高空泡分率
答案： C.

科目： 292004
知能類： K1.04 [2.6/2.7]
序號： B1852

Which one of the following is a characteristic of Doppler broadening?
A. As reactor coolant temperature increases, less moderator molecules will be present in the core to thermalize neutrons.
B. As reactor fuel temperature increases, neutrons from a wider energy spectrum will be captured in the fuel.
C. As moderator void percentage increases, neutrons will travel farther in the core before being absorbed or scattered.
D. As control rods are withdrawn, additional reactor fuel will be exposed and result in a power increase.
ANSWER: B.

下列何者是都卜勒擴張（Doppler broadening）的特徵？
A. 當反應器冷卻水溫度增加時，在爐心用以熱化中子的緩和劑分子數會減少
B. 當反應器燃料溫度增加時，更寬能譜的中子將會在燃料中被捕獲
C. 當緩和劑空泡分率增加時，爐心內的中子在被吸收或散射前移動的距離會更遠
D. 當控制棒抽出時，將露出更多的反應器燃料，而導致功率增加
答案： B.

科目： 292004
知能類： K1.04 [2.6/2.7]
序號： B1952 (P650)

Which one of the following isotopes is the most significant contributor to resonance capture of fission neutrons in the reactor core at the beginning of core life?
A. U-238
B. U-233
C. Pu-240
D. Pu-239
ANSWER: A.

對於一處於燃料週期初期的反應器爐心，下列哪一個同位素是最主要的分裂中子共振捕獲者？
A. U-238
B. U-233
C. Pu-240
D. Pu-239
答案： A.

科目： 292004
知能類： K1.04 [2.6/2.7]
序號： B3352 (P2050)

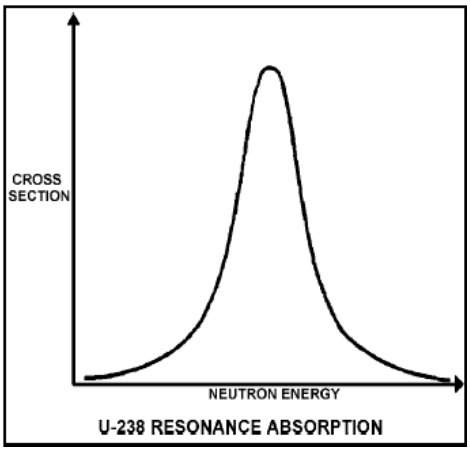
Which one of the following isotopes is the most significant contributor to resonance capture of fission neutrons in the reactor core at the end of a fuel cycle?
A. U-235
B. U-238
C. Pu-239
D. Pu-240
ANSWER: B.

對於一處於燃料週期末期的反應器爐心，下列哪一個同位素是最主要的分裂中子共振捕獲者？
A. U-235
B. U-238
C. Pu-239
D. Pu-240
答案： B.

科目： 292004
知能類： K1.04 [2.6/2.7]
序號： B3753 (P3750)

Refer to the drawing of a curve showing the neutron absorption characteristics of a typical U-238 nucleus at a resonance neutron energy (see figure below). The associated reactor is currently operating at steady-state 80% power.
During a subsequent reactor power decrease to 70%, the curve will become _____; and the percentage of the core neutron population lost to resonance capture by U-238 will _____.
A. taller and more narrow; decrease
B. taller and more narrow; increase
C. shorter and broader; decrease
D. shorter and broader; increase
ANSWER: A.

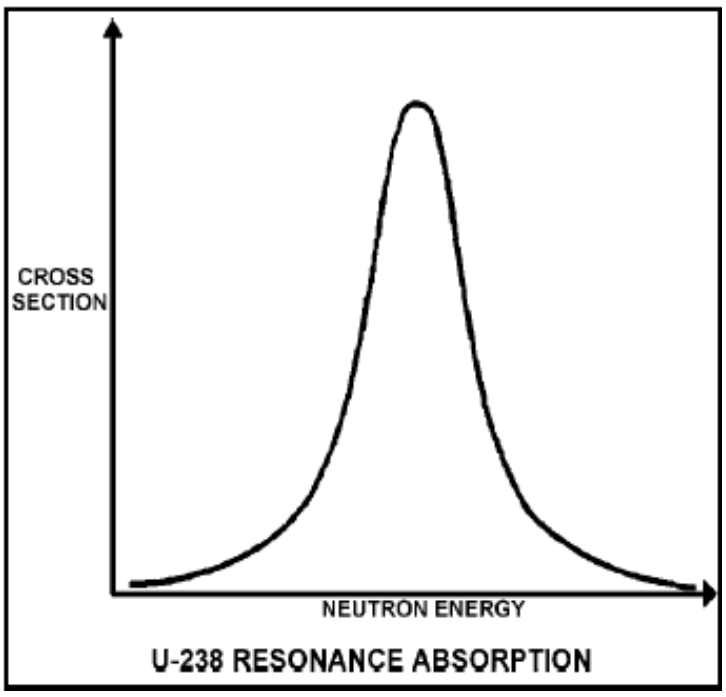
在共振中子能量下，一典型U-238原子核的中子吸收特徵曲線如下圖所示。相關的反應器目前在80%功率的穩態下運轉。其後反應器功率降低至70%，此曲線將變得_____；而爐心中子因被U-238共振捕獲而損耗的百分率將會_____。
A. 較高且較窄；減少
B. 較高且較窄；增加
C. 較矮且較寬；減少
D. 較矮且較寬；增加
答案： A.



科目： 292004
知能類： K1.04 [2.9/2.9]
序號： B3852 (P3850)

Refer to the drawing of microscopic cross section for absorption versus neutron energy for a resonance peak in U-238 in a reactor operating at 80% power (see figure below).
If reactor power is decreased to 60%, the height of the curve will _____ and the area under the curve will _____.
A. increase; increase
B. increase; remain the same
C. decrease; decrease
D. decrease; remain the same
ANSWER: B.

一反應器在80%功率的穩態下運轉，在U-238共振峰下，微觀吸收截面(microcopic cross section)與中子能量的關係曲線如下圖所示。若反應器功率降低至60%，則曲線的高度會_____，而曲線下的面積會_____。
A. 增加；增加
B. 增加；維持不變
C. 減少；減少
D. 減少；維持不變
答案： B.



科目： 292004
知能類： K1.05 [2.9/2.9]
序號： B452 (P2251)

Which one of the following pairs of isotopes is responsible for the negative reactivity associated with a fuel temperature increase near the end of core life?
A. U-235 and Pu-239
B. U-235 and Pu-240
C. U-238 and Pu-239
D. U-238 and Pu-240
ANSWER: D.

在接近爐心壽命末期時，下列哪一組同位素會造成因燃料溫度上升引起的負反應度？
A. U-235 和 Pu-239
B. U-235 和 Pu-240
C. U-238 和 Pu-239
D. U-238 和 Pu-240
答案： D.

科目： 292004
知能類： K1.05 [2.9/2.9]
序號： B552 (P2451)

Which one of the following describes how the magnitude of the Doppler coefficient of reactivity is affected over core life?
A. It becomes more negative due to the buildup of Pu-240.
B. It becomes less negative due to the buildup of fission products.
C. It becomes more negative initially due to gadolinium burnout, then less negative due to fuel depletion.
D. It remains essentially constant.
ANSWER: A.

下列何者正確地描述了都卜勒係數所對應之反應度的大小在爐心壽命中受到影響？
A. 因為Pu-240的累積而使得其負值更大
B. 因為分裂產物的累積而使得其負值變少
C. 開始時因為釓（Gd）的消耗而使得其負值增加，其後因為燃料的消耗而負值減少
D. 基本上維持不變
答案： A.

科目： 292004
知能類： K1.05 [2.9/2.9]
序號： B1353

Compared to beginning of core life, the Doppler coefficient of reactivity is _____ negative at end of core life due to _____. (Assume the same initial fuel temperature.)
A. less; depletion of U-238
B. more; burnout of gadolinium
C. less; buildup of fission products
D. more; buildup of Pu-240
ANSWER: D.

與爐心壽命初期相比，在爐心壽命末期時，都卜勒係數的負值_____，因為_____。（假設起始的燃料溫度相同。）
A. 較小；U-238的消耗
B. 較大；釓（Gd）的消耗
C. 較小；分裂產物的累積
D. 較大；Pu-240的累積
答案： D.

科目： 292004
知能類： K1.05 [2.9/2.9]
序號： B2053 (P2052)

Compared to operating at a low power level, the fuel temperature (Doppler) coefficient of reactivity at a high power level is _____ negative due to _____. (Assume the same core age.)
A. less; buildup of fission product poisons
B. more; improved pellet-to-clad heat transfer
C. less; higher fuel temperature
D. more; increased neutron flux
ANSWER: C.

與在低功率運轉相比，在高功率運轉下的燃料溫度（都卜勒）係數有_____負值，因為_____。（假設爐心年齡相同。）
A. 較小；分裂產物毒物的累積
B. 較大；燃料丸至護套熱傳導的改善
C. 較小；較高的燃料溫度
D. 較大；中子通率的增加
答案： C.

科目： 292004
知能類： K1.05 [2.9/2.9]
序號： B2152 (P2151)

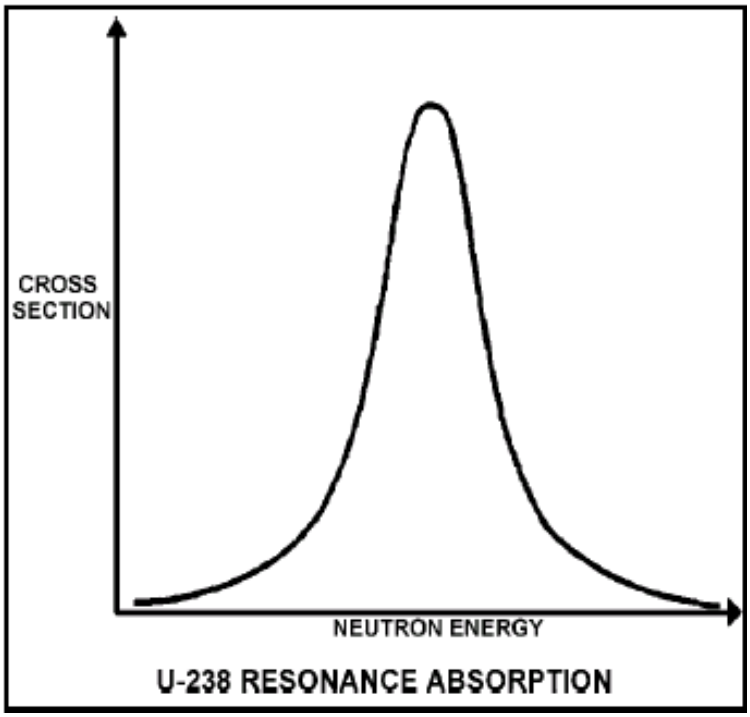
Which one of the following contains the nuclides responsible for most of the resonance capture of fission neutrons in the core at the beginning of the sixth fuel cycle? (Assume that each refueling replaces one-third of the fuel.)
A. U-235 and Pu-239
B. U-235 and U-238
C. U-238 and Pu-240
D. U-238 and Pu-239
ANSWER: C.

對於一在第六燃料週期初期時的反應器爐心，下列哪一組核種造成了大部分的分裂中子共振捕獲？
A. U-235 和 Pu-239
B. U-235 和 U-238
C. U-238 和 Pu-240
D. U-238 和 Pu-239
答案：C

科目： 292004
知能類： K1.05 [2.9/2.9]
序號： B2453 (P2352)

Refer to the drawing of microscopic cross section for absorption versus neutron energy for a resonance peak in U-238 (see figure below).
If fuel temperature increases, the area under the curve will _____ and negative reactivity will be added to the core because _____.
A. increase; neutrons of a wider range of energies will be absorbed by U-238
B. increase; more neutrons will be absorbed by U-238 at the resonance neutron energy
C. remain the same; neutrons of a wider range of energies will be absorbed by U-238
D. remain the same; more neutrons will be absorbed by U-238 at the resonance neutron energy
ANSWER: C.

在U-238共振峰下，微觀吸收截面與中子能量的關係曲線如下圖所示。若燃料溫度增加，則曲線下的面積會_____，同時會有負反應度加入爐心，因為_____。
A. 增加；有更廣泛能量範圍的中子會被U-238吸收
B. 增加；有更多的中子會被U-238在共振中子能量下吸收
C. 維持不變；有更廣泛能量範圍的中子會被U-238吸收
D. 維持不變；有更多的中子會被U-238在共振中子能量下吸收
答案： C.



科目： 292004
知能類： K1.05 [2.9/2.9]
序號： B2553 (P2651)

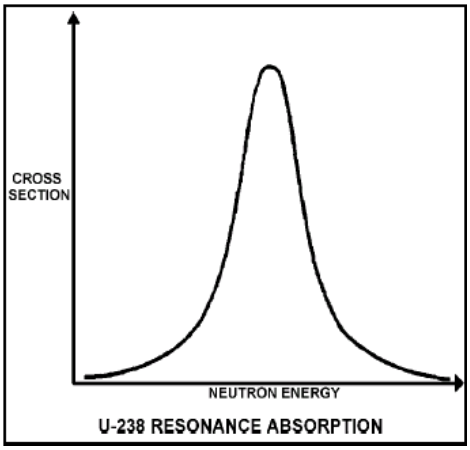
The fuel temperature (Doppler) coefficient of reactivity is more negative at the _____ of a fuel cycle because _____. (Assume the same initial fuel temperature throughout the fuel cycle.)
A. end; more Pu-240 is in the core
B. end; more fission products are in the core
C. beginning; more U-238 is in the core
D. beginning; less fission products are in the core
ANSWER: A.

燃料溫度（都卜勒）係數的負值在燃料週期_____時會增加，因為_____。（假設在整個燃料週期中有同樣的起始燃料溫度。）
A. 末期；爐心的Pu-240較多
B. 末期；爐心中的分裂產物較多
C. 初期；爐心中的U-238較多
D. 初期；爐心的分裂產物較少
答案： A.

科目： 292004
知能類： K1.05 [2.9/2.9]
序號： B2753 (P2751)

Refer to the drawing of microscopic cross section for absorption versus neutron energy for a 6.7 electron volt (ev) resonance peak in U-238 for a reactor operating at 50% power (see figure below). If fuel temperature decreases by 50 ^{o}F, the area under the curve will _____ and positive reactivity will be added to the core because _____.
A. decrease; fewer neutrons will be absorbed by U-238 overall
B. decrease; fewer 6.7 ev neutrons will be absorbed by U-238 at the resonance energy
C. remain the same; fewer neutrons will be absorbed by U-238 overall
D. remain the same; fewer 6.7 ev neutrons will be absorbed by U-238 at the resonance energy
ANSWER: C.

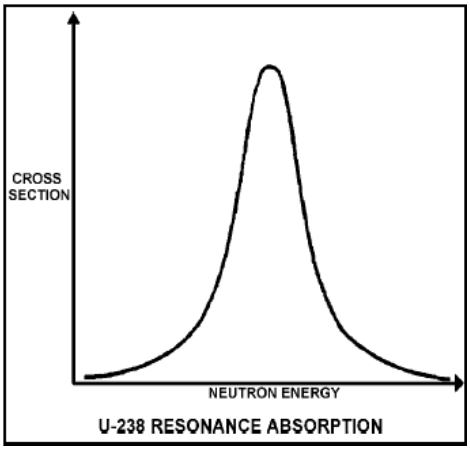
一反應器在50%功率下運轉，於U-238共振尖峰值6.7電子伏特下，其微觀吸收截面與中子能量的關係如下圖所示。若燃料溫度降低50°F，則曲線下的面積會_____，同時正反應度會因為_____而加入爐心。
A. 減小；被U-238所吸收的中子總數較少
B. 減小；在共振能量下，被U-238所吸收的6.7電子伏特中子較少
C. 維持不變；被U-238所吸收的中子總數較少
D. 維持不變；在共振能量下，被U-238所吸收的6.7電子伏特中子較少
答案： C.



科目： 292004
知能類： K1.05 [2.9/2.9]
序號： B2852 (P2850)

Refer to the drawing of microscopic cross section for absorption versus neutron energy for a resonance peak in U-238 in a reactor operating at 80% power (see figure below).
If reactor power is increased to 100%, the height of the curve will _____ and the area under the curve will _____.
A. increase; increase
B. increase; remain the same
C. decrease; decrease
D. decrease; remain the same
ANSWER: D

一反應器在穩態80%功率下運轉，於U-238共振尖峰下，其微觀吸收截面與中子能量的關係如下圖所示。若反應器功率增加至100%，則曲線的高度會_____，而曲線下的面積會_____。
A. 增加；增加
B. 增加；維持不變
C. 減少；減少
D. 減少；維持不變
答案： D



科目： 292004
知能類： K1.10 [3.2/3.2]
序號： B125

Which one of the following will cause the void coefficient to become less negative? (Consider only the indicated changes.)
A. Core void fraction increases.
B. Fuel temperature decreases.
C. Gadolinium burns out.
D. Control rods are partially inserted.
ANSWER: B.

下列何者會導致空泡係數負值減少？（只考慮所列出參數的改變。）
A. 爐心空泡分率增加
B. 燃料溫度下降
C. 釓（Gd）消耗
D. 控制棒部分插入
答案： B.

科目： 292004
知能類： K1.10 [3.2/3.2]
序號： B354

Which one of the following is the primary reason the void coefficient becomes less negative with core burnup toward the end of core life?
A. The thermal neutron flux increases.
B. The thermal diffusion length decreases.
C. The fuel centerline temperature increases.
D. The control rod density decreases.
ANSWER: D.

在爐心壽命接近末期燃耗時，下列何者是空泡係數負值減少的主要原因？
A. 熱中子通率增加
B. 熱擴散長度減小
C. 燃料中心線溫度增加
D. 控制棒密度減小
答案： D.

科目： 292004
知能類： K1.10 [3.2/3.2]
序號： B2153

Which one of the following describes why most reactor power is produced in the lower half of a core (versus the upper half) that has been operating at 100% power for several weeks at the beginning of a fuel cycle?
A. Xenon concentration is higher in the upper half of the core.
B. The moderator-to-fuel ratio is higher in the upper half of the core.
C. The void coefficient is adding more negative reactivity in the upper half of the core.
D. Control rods are adding more negative reactivity in the upper half of the core.
ANSWER: C.

於燃料週期初期的數週內，下列何者正確地描述了反應器在100%功率下運轉時，大部分的功率乃是由爐心的下半部（相對於上半部）所產生？
A. 在爐心上半部氙濃度較高
B. 在爐心上半部緩和劑對燃料（Moderator-to-Fuel）的比率較高
C. 在爐心上半部空泡係數所加入的負反應度較大
D. 在爐心上半部控制棒加入的負反應度較大
答案： C.

科目： 292004
知能類： K1.11 [2.5/2.6]
序號： B175

Assume a BWR plant is at 20% power. Power is increased to 30% by control rod withdrawal. Which one of the following statements describes the change in void fraction?
A. Void fraction initially decreases, then linearly increases with rod worth increase.
B. Void fraction increases.
C. Void fraction decreases.
D. Void fraction remains the same.
ANSWER: B.

假設一於20%功率運轉之BWR電廠，藉由抽控制棒抽出而使功率增加至30%。下列何者敘述正確地描述了空泡分率的變化？
A. 空泡分率最初減少，然後隨著控制棒本領增加而線性地增加
B. 空泡分率增加
C. 空泡分率減小
D. 空泡分率維持不變
答案： B.

科目： 292004
知能類： K1.11 [2.5/2.6]
序號： B953

Which one of the following describes how and why the void coefficient changes as void fraction increases during a control rod withdrawal at power?

A. Becomes more negative due to a greater fractional loss of moderator for a 1% void increase at higher void fractions
B. Becomes more negative due to the reduction in the fast fission contribution to the neutron population
C. Becomes less negative due to a greater fraction of neutrons lost to leakage from the core
D. Becomes less negative due to the increased absorption of neutrons by U-238

ANSWER: A.

下列何者正確地描述在控制棒抽出時，空泡係數的變化及其原因？

A. 負值變大，因為在較高空泡分率下，增加1%的空泡會導致緩和劑產生較大的損失分率
B. 負值變大，因為快分裂減少導致中子數量減少
C. 負值變小，因為較多的中子由爐心洩漏而損失
D. 負值變小，因為被U-238所吸收的中子增加

答案：A.

科目： 292004
知能類： K1.14 [3.3/3.3]
序號： B52

A reactor has been shut down for a shift and shutdown cooling is in service. Upon a loss of cooling water to the shutdown cooling heat exchangers, which of the following coefficients of reactivity will act first to change core reactivity? (Assume continued forced circulation through the core.)
A. Moderator temperature coefficient
B. Doppler coefficient
C. Void coefficient
D. Pressure coefficient
ANSWER: A.

一反應器停機一值(約八小時)，並進行停機冷卻（Shutdown Cooling）中。由於供應停機冷卻之熱交換器的冷卻水流失，下列哪一個反應度係數會最先改變爐心的反應度？（假設爐心有持續的強制循環。）
A. 緩和劑溫度係數
B. 燃料溫度係數
C. 空泡係數
D. 壓力係數
答案： A.

科目： 292004
知能類： K1.14 [3.3/3.3]
序號： B253

During a hot reactor startup with the reactor coolant at 520˚F, excessive rod withdrawal results in a 10 second reactor period with reactor power low in the intermediate range. Without any further operator action, the _____ coefficient will respond first to reduce the rate of the power increase.
A. pressure
B. void
C. moderator
D. Doppler
ANSWER: D.

一熱反應器於冷卻水溫為520˚F啟動，因過量的控制棒抽出而導致10秒的反應器週期，而反應器功率在中程階（Intermediate Range）的低值附近。在沒有任何的運轉員操作下，_____係數將會首先降低功率的增加速率。
A. 壓力
B. 空泡
C. 緩和劑
D. 都卜勒
答案： D.

科目： 292004
知能類： K1.14 [3.3/3.3]
序號： B272

For a normal reactor power increase from 20% to 100%, the smallest change in negative reactivity at steady-state conditions will be caused by...
A. void content.
B. fuel temperature.
C. xenon concentration.
D. moderator temperature.
ANSWER: D.

當一正常反應器，其功率從20%增加至100%時，下列哪一項將會導致在穩態下負反應度的改變量最小？
A. 空泡含量
B. 燃料溫度
C. 氙濃度
D. 緩和劑溫度
答案： D.

科目： 292004
知能類： K1.14 [3.3/3.3]
序號： B1653

Which one of the following lists the moderator temperature coefficient (MTC), fuel temperature coefficient (FTC), and void coefficient (VC) in typical order of magnitude from most negative to least negative at 50% power at the middle of core life?
A. FTC, VC, MTC
B. FTC, MTC, VC
C. VC, MTC, FTC
D. VC, FTC, MTC
ANSWER: C.

在50%功率、爐心壽命中期時，將緩和劑溫度係數（MTC）、燃料溫度係數（FTC）以及空泡係數（VC）從負值最多到負值最少的排列，下列何者是正確的？
A. FTC, VC, MTC
B. FTC, MTC, VC
C. VC, MTC, FTC
D. VC, FTC, MTC
答案： C.

科目： 292004
知能類： K1.14 [3.3/3.3]
序號： B2353

During a normal power decrease from 100% to 20%, the smallest positive reactivity addition will be caused by the change in...
A. void percentage.
B. fuel temperature.
C. xenon concentration.
D. moderator temperature.
ANSWER: D.

當一正常功率從100%降至20%時，下列哪一項的改變將會導致最小的正反應度加入？
A. 空泡百分比
B. 燃料溫度
C. 氙濃度
D. 緩和劑溫度
答案： D.

科目： 292005
知能類： K1.01 [3.2/3.3]
序號： B854

Rod position indications indicate that a control rod is 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.

控制棒位置指示顯示控制棒位於位置16。當控制棒移動至位置22，則其被
A. 插入18吋
B. 抽出18吋
C. 插入36吋
D. 抽出36吋
答案： B.

科目： 292005
知能類： K1.01 [3.2/3.3]
序號： B1255

A 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% into the core, it will be located at rod position...
A. 9.
B. 12.
C. 27.
D. 36.
ANSWER: B.

一爐心內的燃料束與控制棒長度皆為12呎。控制棒每移動3吋，便會指示新的位置。若控制棒插入爐心75%，則其所指示的位置為
A. 9.
B. 12.
C. 27.
D. 36.
答案： B.

科目： 292005
知能類： K1.01 [3.2/3.3]
序號： B3054

Rod position indication shows that a control rod is at position 22. If the control rod is then moved to position 12, it is being...
A. inserted 30 inches.
B. withdrawn 30 inches.
C. inserted 60 inches.
D. withdrawn 60 inches.
ANSWER: A.

控制棒位置指示顯示控制棒位置為22。若控制棒後來移動至位置12，則此棒
A. 插入30吋
B. 抽出30吋
C. 插入60吋
D. 抽出60吋
答案： A.

科目： 292005
知能類： K1.01 [3.2/3.3]
K1.11 [2.4/2.5]
序號： B3554

A group of control rods, initially at position 06 are withdrawn three notches. After withdrawal, this group of rods is classified as _____ rods; and the blade tips for this group of rods are positioned 36 inches from the _____ of the reactor core.
A. shallow; top
B. shallow; bottom
C. deep; top
D. deep; bottom
ANSWER: C.

一組控制棒，起始位置為06，抽出三節。在抽出之後，此組棒經分類為_____棒；而此組棒的葉梢位置在離反應器爐心_____部36吋處。
A. 淺；頂
B. 淺；底
C. 深；頂
D. 深；底
答案： C.

科目： 292005
知能類： K1.02 [2.5/2.6]
序號： B754

Which one of the following materials is used in control rods primarily for thermal neutron absorption?
A. B-10.
B. C-12.
C. Xe-135.
D. U-235.
ANSWER: A.

下列何者用於控制棒中主要為了吸收熱中子？
A. B-10.
B. C-12.
C. Xe-135.
D. U-235.
答案： A.

科目： 292005
知能類： K1.04 [3.5/3.5]
序號： 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.

當一淺控制棒抽出一或二節時，偶而會發生逆功率效應（或逆反應度效應），此乃因為
A. 區域都卜勒效應增加導致區域功率微量的減少
B. 鄰近控制棒之陰影效應導致區域功率微量的減少
C. 區域功率大量的增加卻被空泡造成之功率減少所抵銷
D. 區域功率大量的增加卻被緩和劑溫度造成之功率減少所抵銷
答案： C.

科目： 292005
知能類： K1.04 [3.5/3.5]
K1.12 [2.6/2.9]
序號： B134

Withdrawal of a deep control rod will significantly affect which one of the following?
A. Axial flux shape
B. Rod shadowing
C. Radial power distribution
D. Reverse power effect
ANSWER: C.

抽出一深控制棒將會顯著影響下列何者？
A. 軸向通量形狀
B. 控制棒陰影效應
C. 徑向功率分佈
D. 逆功率效應
答案： C.

科目： 292005
知能類： K1.04 [3.5/3.5]
序號： B254

A reactor is operating at steady-state 50% 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.

一反應器於50%功率穩態下運轉。一控制棒插入一短距離（從節距08至02）。假設再循環流量維持固定，則反應器功率將
A. 增加，並在一較高功率達到穩定
B. 暫時增加，然後回復到初始功率
C. 減少，並在一較低功率達到穩定
D. 暫時減少，然後回復到初始功率
答案： C.

科目： 292005
知能類： K1.04 [3.5/3.5]
序號： B356 (P354)

A reactor is critical below the point of adding heat. 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 value due to the resulting decrease in moderator temperature.
C. until inherent positive reactivity feedback causes the reactor to become critical at a lower neutron level.
D. temporarily, then return to the original value due to subcritical multiplication.
ANSWER: A.

一反應器達到臨界但未到加熱階段，若控制棒手動插入5秒，則反應器功率將減少
A. 至一由次臨界增殖所決定之停機功率位階
B. 一短暫時間，其後回復至原來功率，因為緩和劑溫度下降
C. 一直到其內在的正反應度回饋導致反應器在較低中子位階下達到臨界
D. 一短暫時間，其後回復至原來功率，此乃因為次臨界增殖所致
答案： A.

科目/題號：292004/1 (2016 新增)
知能類：k1.02〔2.5/2.6〕
序號：B4226

A reactor is shut down with the reactor vessel head removed. The core is covered by 23 feet of refueling water at a temperature of 100°F.
Which one of the following will increase K_{eff} if the reactor is at the end of core life, but will decrease K_{eff} if the reactor is at the beginning of core life?
A. A fresh neutron source is installed in the core.
B. Refueling water temperature is increased to 105°F.
C. A spent fuel assembly is replaced with a new fuel assembly.
D. Movable incore source range instrumentation is repositioned to increase source range count rate.
ANSWER: B.

一反應器係停機並移除反應器頂蓋。爐心以高 23 feet，溫度 100˚F的更換燃料水淹蓋。下列何者將會在爐心壽命終期增加有效增殖因數，而在爐心壽命初期反而會減少有效增殖因數？
A.安裝一組新中子源在爐心內
B.增加水溫到 105˚F
C.用一組新燃料元件更換一組用過燃料元件
D.重新定位爐內源階核儀以增加源階中子計數率

答案： B

科目/題號：292004/2 (2016 新增)
知能類：k1.02〔2.5/2.6〕
序號：B6526

Consider a one month period of 100 percent power operation near the beginning of a fuel cycle.
During this period of operation, the depletion of U-235 in the fuel tends to make the moderator temperature coefficient _____ negative; and the withdrawal of control rods tends to make the moderator temperature coefficient _____ negative.
A. less; less
B. less; more
C. more; less
D. more; more
ANSWER: A

考量在接近燃料週期初期 100%功率運轉一個月期間。於此運轉期間，燃料中鈾-235 的燃耗將使緩和劑溫度係數負值變____；而且控制棒抽出會使緩和劑溫度係數負值變_____。
A.更少；更少
B.更少；更多
C.更多；更少
D.更多；更多

答案： A

科目/題號：292004/3 (2016 新增)
知能類：k1.02〔2.5/2.6〕
序號：B6926(P6926)

Which one of the following 10 percent power level changes produces the largest amount of negative reactivity from the fuel temperature coefficient? (Assume that each power level change produces the same increase/decrease in fuel temperature.)
A. 30 percent to 40 percent
B. 30 percent to 20 percent
C. 80 percent to 90 percent
D. 80 percent to 70 percent
ANSWER: A.

下列何者的 10%功率改變將從燃料溫度係數產生最大的負反應度值？(假設每一個功率的改變在燃料溫度產生相同的增加/減少)
A.30%至 40%
B.30%至 20%
C.80%至 90%
D.80%至 70%

答案： A

科目/題號：292004/4 (2016 新增)
知能類：k1.02〔2.5/2.6〕
序號：B7608

A reactor is shutdown near the end of a fuel cycle with the shu tdown cooling system in service. The initial reactor vessel water temperature is 100°F. In this condition, the reactor is overmoderated.
Then, a heatup and pressurization is performed to bring the reactor to normal operating temperature and pressure. The reactor remains subcritical.
During the heatup, K_{eff} will…
A. increase continuously.
B. decrease continuously.
C. initially increase, and then decrease.
D. initially decrease, and then increase.
ANSWER: C.

一反應器在接近燃料循環末期時停機，且停機冷卻系統在運轉中。起初爐水溫度是 100℉。在此條件下，反應器被過度緩和。然後執行加熱和加壓使反應器達到正常運轉溫度和壓力。反應器仍舊是次臨界。當加熱時有效增殖因數將會_____。
A.持續增加
B.持續減少
C.起初增加，然後減少
D.起初減少，然後增加

答案： C

科目/題號：292004/5 (2016 新增)
知能類：k1.02〔2.5/2.6〕
序號：B7637(P7637)

Which one of the following describes a situation where an increase in moderator temperature can add positive reactivity?
A. At low moderator temperatures, an increase in moderator temperature can reduce neutron leakage from the core sufficiently to add positive reactivity.
B. At low moderator temperatures, an increase in moderator temperature can reduce neutron capture by the moderator sufficiently to add positive reactivity.
C. At high moderator temperatures, an increase in moderator temperature can reduce neutron leakage from the core sufficiently to add positive reactivity.
D. At high moderator temperatures, an increase in moderator temperature can reduce neutron capture by the moderator sufficiently to add positive reactivity.
ANSWER: B.

下列何者敘述係當增加緩和劑溫度時能加入正反應度？
A.在低緩和劑溫度時，增加緩和劑溫度能充分減少爐心中子洩漏而加入正反應度
B.在低緩和劑溫度時，增加緩和劑溫度能充分降低緩和劑中子捕獲而加入正反應度
C.在高緩和劑溫度時，增加緩和劑溫度能充分減少爐心中子洩漏而加入正反應度
D.在高緩和劑溫度時，增加緩和劑溫度能充分降低緩和劑中子捕獲而加入正反應度

答案： B

科目/題號：292004/6 (2016 新增)
知能類：k1.02〔2.5/2.6〕
序號：B7667

A reactor is shut down near the middle of a fuel cycle with the shutdown cooling system in service.
The initial reactor vessel water temperature is 160ºF. In this condition, the reactor is undermoderated.
Then, a heatup and pressurization is performed to bring the reactor to normal operating temperature
and pressure. The reactor remains subcritical.
During the heatup, K_{eff} will…
A. increase continuously.
B. decrease continuously.
C. initially increase, and then decrease.
D. initially decrease, and then increase.
ANSWER: B.

一反應器在接近燃料週期中期時停機，且停機冷卻系統在運轉中。起初爐水溫度是 160℉。在此條件下，反應器係緩和不足。然後執行加熱和加壓使反應器達到正常運轉溫度和壓力。反應器仍舊是次臨界，當加熱時有效增殖因數將會_____。
A.持續增加
B.持續減少
C.起初增加，然後減少
D.起初減少，然後增加

答案： B

科目/題號：292004/7 (2016 新增)
知能類：k1.02〔2.6/2.7〕
序號：B4826(P4826)

If the average temperature of a fuel pellet decreases by 50°F, the microscopic cross-section for absorption of neutrons at a resonance energy of U-238 will _____; and the microscopic cross-sections for absorption of neutrons at energies that are slightly higher or lower than a U-238 resonance energy will _____.
A. increase; increase
B. increase; decrease
C. decrease; increase
D. decrease; decrease
ANSWER: B.

假如燃料丸的平均溫度降低 50˚F，則鈾-238 的共振能量吸收中子微觀截面將會____；而且較鈾-238 共振能量稍高或稍低的吸收中子微觀截面將會____。
A.增加；增加
B.增加；減少
C.減少；增加
D.減少；減少

答案： B

科目/題號：292004/8 (2016 新增)
知能類：k1.04〔2.6/2.7〕
序號：B6627(P6626)

If the average temperature of a fuel pellet increases by 50°F, the microscopic cross-section for absorption of neutrons at a resonance energy of U-238 will _____; and the microscopic cross-sections for absorption of neutrons at energies that are slightly higher or lower than a U-238 resonance energy will _____.
A. increase; increase
B. increase; decrease
C. decrease; increase
D. decrease; decrease
ANSWER: C.

假如燃料丸的平均溫度增加 50℉，則鈾-238 的共振能量吸收中子微觀截面將會____；而且較鈾-238 共振能量稍高或稍低的吸收中子微觀截面將會____。
A.增加；增加
B.增加；減少
C.減少；增加
D.減少；減少

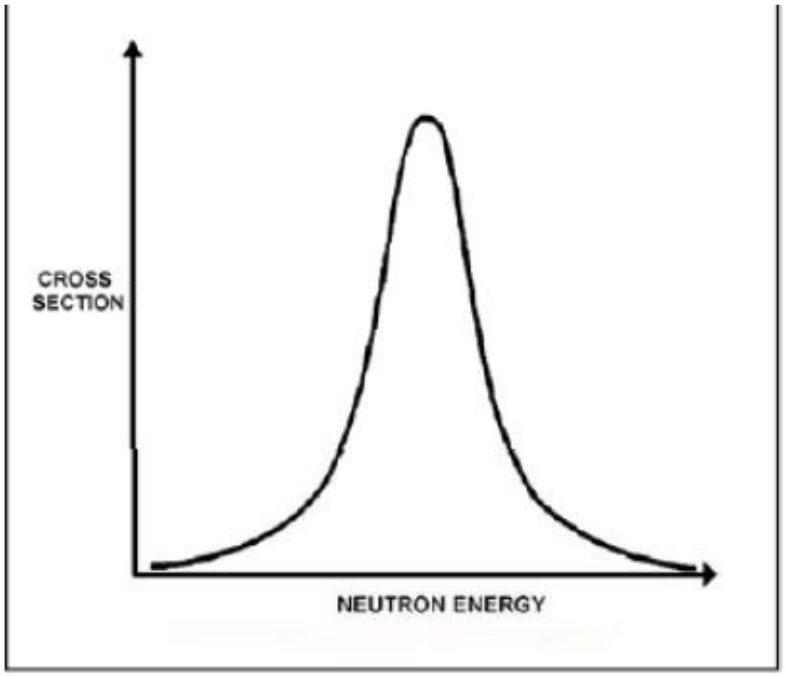
答案： C

科目/題號：292004/9 (2016 新增)
知能類：k1.04〔2.6/2.7〕
序號：B7648(P7648)

Refer to the drawing of a curve showing the neutron absorption cross-section for U-238 at a resonance energy (see figure below). The reactor associated with the curve is operating at 80 percent power.
If reactor power is increased to 90 percent over the next few hours, the curve will become _____; and the percentage of the core neutron population lost to resonance capture by U-238 will _____.
A. shorter and broader; increase
B. shorter and broader; decrease
C. taller and more narrow; increase
D. taller and more narrow; decrease
ANSWER: A.

請參考顯示鈾-238 共振能量與中子吸收截面曲線圖(見下圖)。與此圖相關之反應器正運轉在 80%功率。假如反應器在其後數小時提升功率至 90%，則曲線圖將會變的____；而且鈾-238 共振捕獲爐內中子數的比例將會____。
A.更矮和更寬；增加
B.更矮和更寬；減少
C.更高和更窄；增加
D.更高和更窄；減少

答案： A



科目/題號：292004/10 (2016 新增)
知能類：k1.04〔2.6/2.7〕
序號：B7678(P7678)

A reactor has an initial effective fuel temperature of 800EF. If the effective fuel temperature increases to 1,000EF, the fuel temperature coefficient will become _____ negative; because at higher effective fuel temperatures, a 1EF increase in effective fuel temperature produces a _____ change in Doppler broadening.
A. less; greater
B. less; smaller
C. more; greater
D. more; smaller
ANSWER: B.

一反應器初始有效燃料溫度 800EF。假如有效燃料溫度增加至 1000EF，燃料溫度係數負值將變得___；因為在較高有效燃料溫度，其有效燃料溫度增加 1EF 將使都卜勒變寬產生____改變。
A.較小；較大
B.較小；較小
C.較多；較大
D.較多；較小

答案： B