TOPIC: 293001
KNOWLEDGE: K1.03 [2.5/2.7]
QID: B73 (P2673)

Refer to the drawing of a water-filled manometer (see figure below).

The manometer is installed across an orifice in a ventilation duct to determine the direction of airflow. With the manometer conditions as shown, the pressure at P1 is _____ than P2; and the direction of airflow is _____.

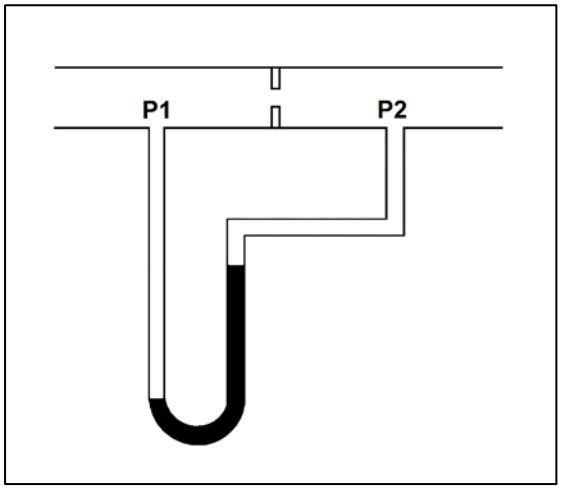
A. greater; left to right

B. greater; right to left

C. less; left to right

D. less; right to left

ANSWER: A.



TOPIC: 293001
KNOWLEDGE: K1.03 [2.5/2.7]
QID: B373 (P374)

Refer to the drawing of two water storage tanks with four differential pressure (D/P) level detectors (see figure below).

The tanks are identical and are being maintained at the same constant water level with 17 psia gas pressure above the water. The tanks are surrounded by standard atmospheric pressure. The temperature of the water in the tanks and reference legs is 70°F.

Which one of the level detectors is sensing the greatest D/P?

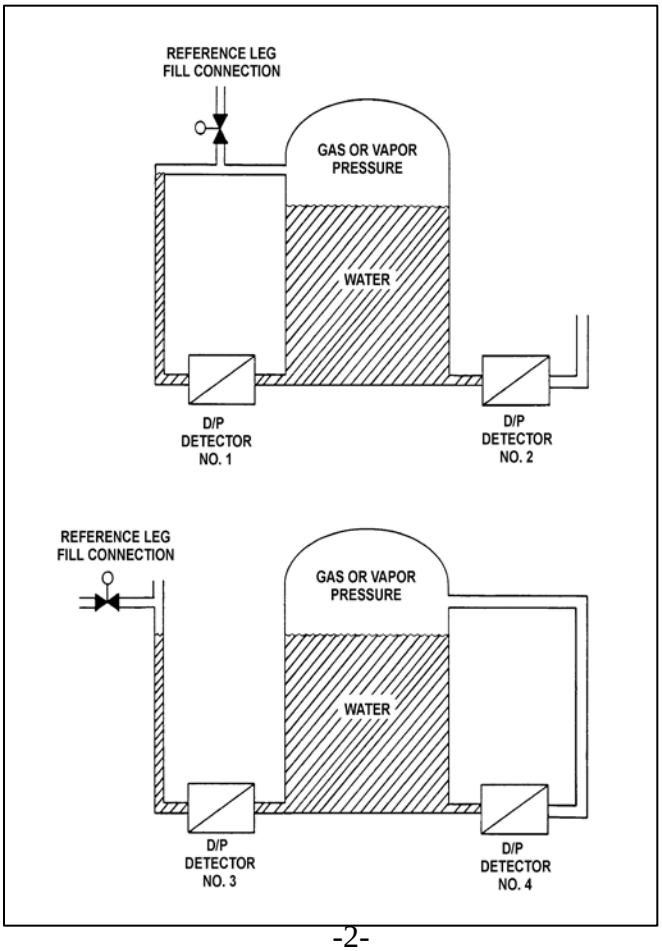
A. No. 1

B. No. 2

C. No. 3

D. No. 4

ANSWER: B.



TOPIC: 293001
KNOWLEDGE: K1.03 [2.5/2.7]
QID: B673 (P2973)

Refer to the drawing of a water-filled manometer (see figure below).

The manometer is installed across an orifice in a ventilation duct to determine the direction of airflow. With the manometer conditions as shown, the pressure at P1 is _____ than P2; and the direction of airflow is _____.

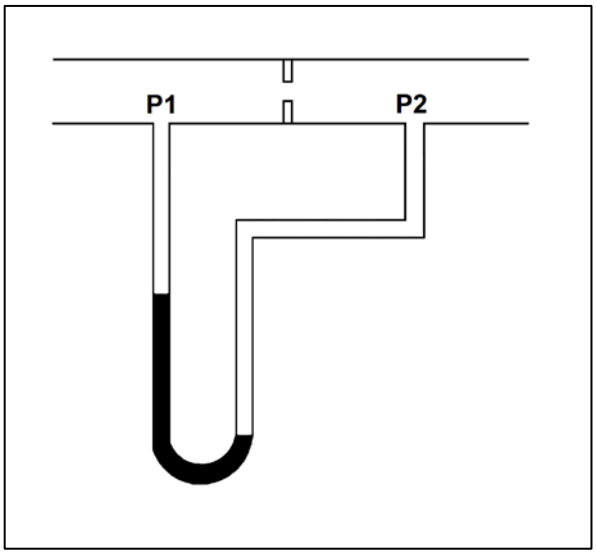
A. less; right to left

B. less; left to right

C. greater; right to left

D. greater; left to right

ANSWER: A.



TOPIC: 293001
KNOWLEDGE: K1.03 [2.5/2.7]
QID: B1073 (P2873)

Refer to the drawing of two water storage tanks with four differential pressure (D/P) level detectors (see figure below).

The tanks are identical with equal water levels and 20 psia gas pressure above the water. The tanks are surrounded by standard atmospheric pressure. The temperature of the water in the tanks and reference legs is 70°F.

If each detector experiences a ruptured diaphragm, which detector(s) will produce a reduced level indication? (Assume that actual tank and reference leg water levels do not change.)

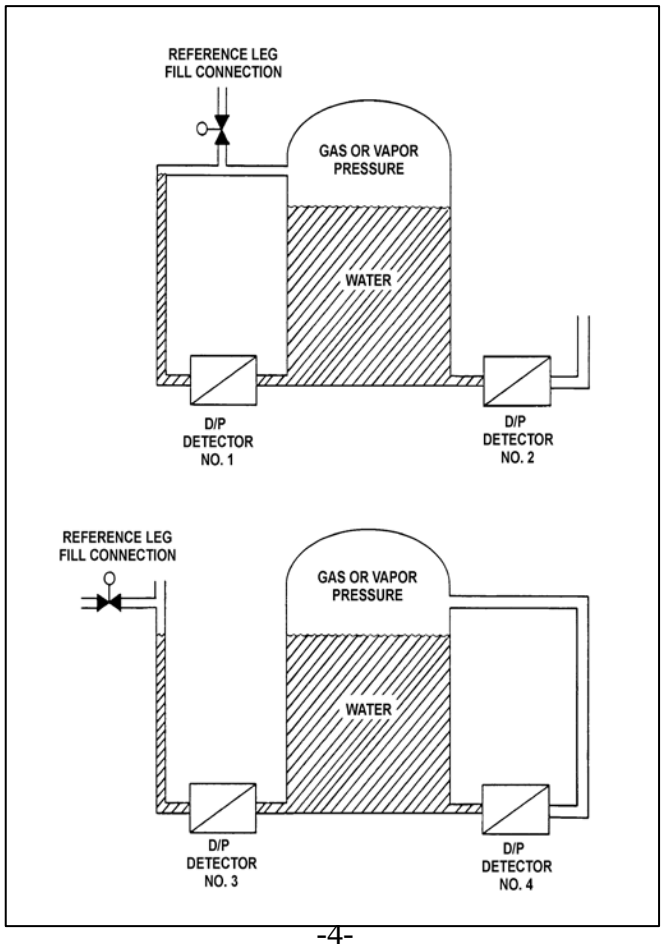
A. No. 1 only

B. No. 2 only

C. No. 1, 2, and 3

D. No. 2, 3, and 4

ANSWER: D.



TOPIC: 293001
KNOWLEDGE: K1.03 [2.5/2.7]
QID: B1174 (P1673)

Refer to the drawing of two water storage tanks with four differential pressure (D/P) level detectors (see figure below).

The tanks are identical and are being maintained at 2 psig overpressure, the same constant water level, and a temperature of 60°F. They are surrounded by atmospheric pressure.

If a leak in the top of each tank causes a complete loss of overpressure, which detector(s) will produce a lower level indication?

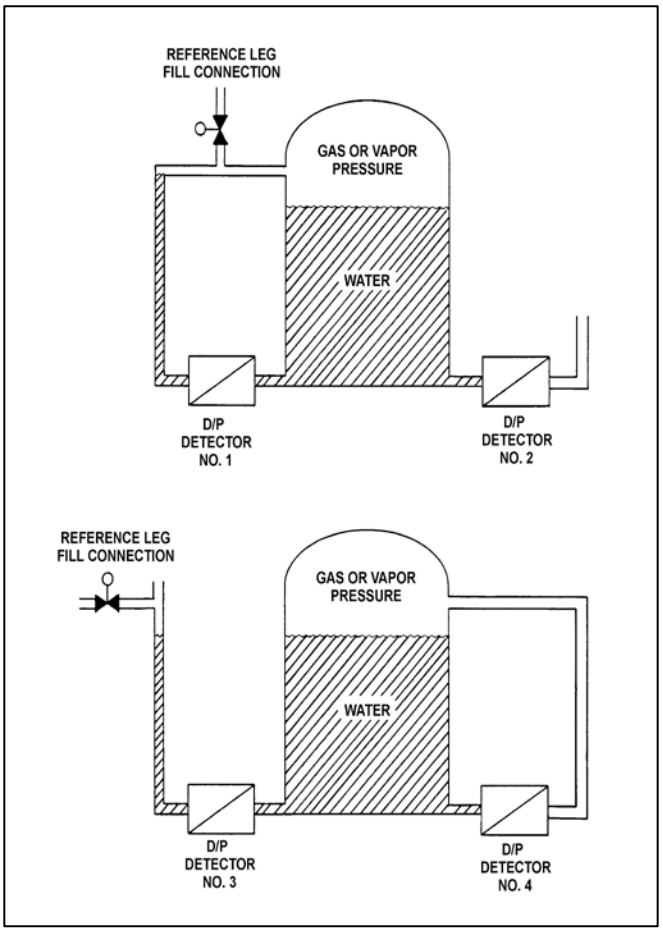
A. No. 1 only

B. No. 2 only

C. No. 1 and 4

D. No. 2 and 3

ANSWER: D.



TOPIC: 293001
KNOWLEDGE: K1.03 [2.5/2.7]
QID: B1873 (P573)

A closed water tank is pressurized with nitrogen. A differential pressure detector is used to measure the tank water level.

To achieve the most accurate water level measurement, the low pressure side of the detector should sense which one of the following?

A. The pressure at the midline of the tank.

B. The pressure of the atmosphere surrounding the tank.

C. The pressure of a column of water external to the tank.

D. The pressure of the gas space at the top of the tank.

ANSWER: D.

TOPIC: 293001
KNOWLEDGE: K1.03 [2.5/2.7]
QID: B2373 (P2373)

Refer to the drawing of two water storage tanks with four differential pressure (D/P) level detectors (see figure below).

The tanks are identical and are being maintained at 2 psig overpressure, 60°F, and the same constant water level. The tanks are located within a sealed containment structure that is currently at standard atmospheric pressure. All level detectors have been calibrated and are producing the same level indication.

If a ventilation system malfunction causes the containment structure pressure to decrease to 13 psia, which level detectors will produce the lowest level indications?

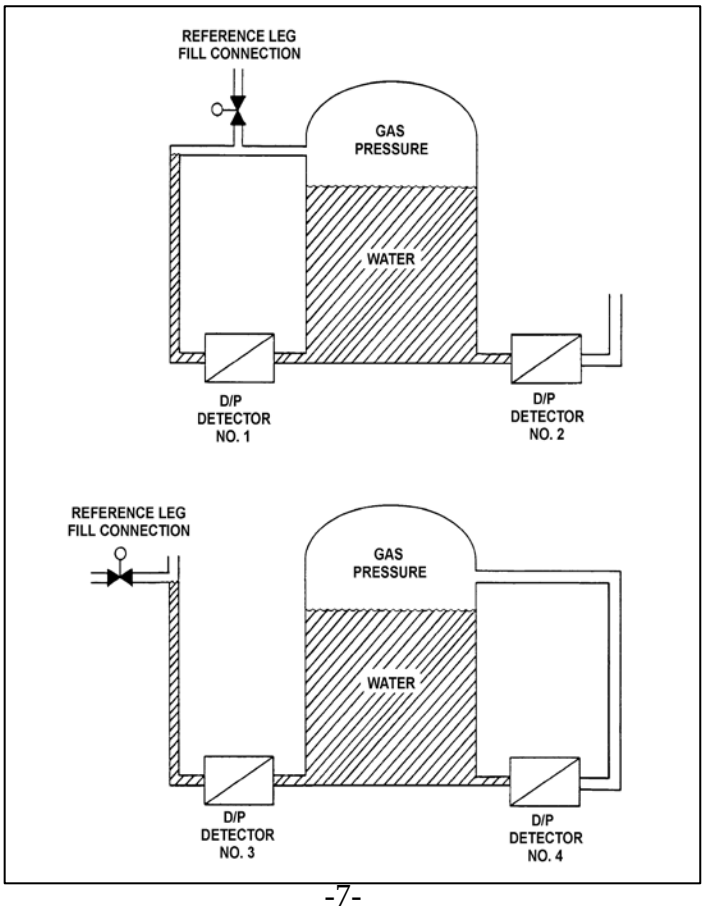
A. 1 and 3

B. 1 and 4

C. 2 and 3

D. 2 and 4

ANSWER: B.



TOPIC: 293001
KNOWLEDGE: K1.03 [2.5/2.7]
QID: B2573 (P2574)

Refer to the drawing of two water storage tanks with four differential pressure (D/P) level detectors (see figure below).

The tanks are identical and are being maintained at 2 psig overpressure, 60°F, and the same constant water level. The tanks are located within a sealed containment structure that is being maintained at standard atmospheric pressure. All level detectors have been calibrated and are producing the same level indication.

If a ventilation malfunction causes the containment structure pressure to decrease to 13 psia, which detectors will produce the highest level indications?

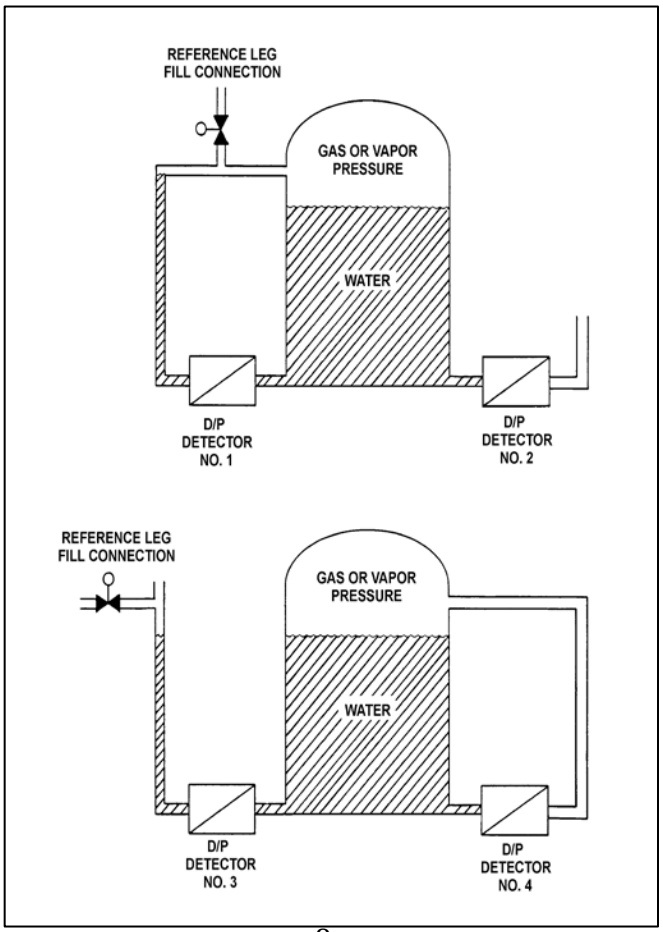
A. 1 and 2

B. 3 and 4

C. 1 and 4

D. 2 and 3

ANSWER: D.



TOPIC: 293001
KNOWLEDGE: K1.03 [2.5/2.7]
QID: B2773

Refer to the drawing of two water storage tanks with four differential pressure (D/P) level detectors (see figure below).

The tanks are identical with equal water levels and 20 psia gas pressure above the water. The tanks are surrounded by standard atmospheric pressure. The temperature of the water in the tanks and reference legs is 70°F.

If each detector experiences a ruptured diaphragm, which detector(s) will produce a higher level indication? (Assume that actual tank and reference leg water levels do not change.)

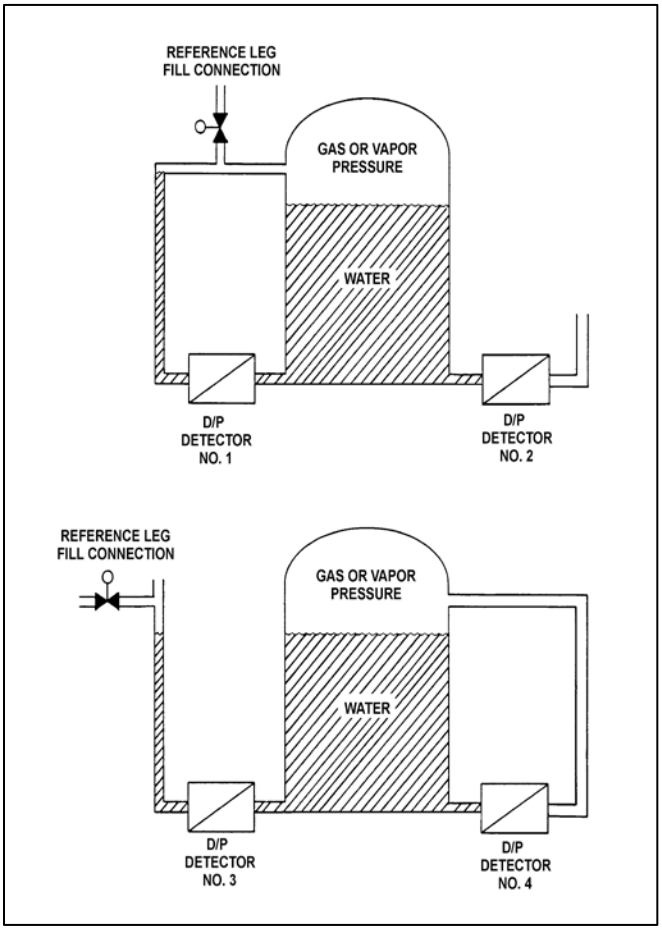
A. No. 1 only

B. No. 2 only

C. No. 1 and 3

D. No. 2 and 4

ANSWER: A.



TOPIC: 293001
KNOWLEDGE: K1.03 [2.5/2.7]
QID: B3173 (P3173)

A water storage tank is vented to atmosphere. The tank is located at sea level and contains 100,000 gallons of 80°F water. A pressure gauge at the bottom of the tank reads 5.6 psig. What is the approximate water level in the tank?

A. 13 feet

B. 17 feet

C. 21 feet

D. 25 feet

ANSWER: A.

TOPIC: 293001
KNOWLEDGE: K1.03 [2.5/2.7]
QID: B3673 (P3673)

Refer to the drawing of a tank with a differential pressure (D/P) level detector (see figure below).

If the tank contains 30 feet of water at 60°F, what is the approximate D/P sensed by the detector?

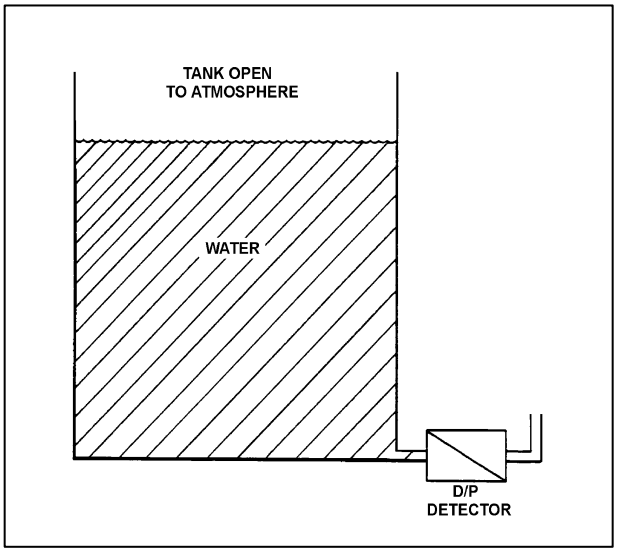
A. 7 psid

B. 13 psid

C. 20 psid

D. 28 psid

ANSWER: B.



TOPIC: 293001
KNOWLEDGE: K1.03 [2.5/2.7]
QID: B3873 (P3873)

A water storage tank is vented to atmosphere. The tank is located at sea level and contains 100,000 gallons of water at 80°F. A pressure gauge at the bottom of the tank reads 7.3 psig. What is the approximate water level in the tank?

A. 13 feet

B. 17 feet

C. 21 feet

D. 25 feet

ANSWER: B.

TOPIC: 293001
KNOWLEDGE: K1.03 [2.5/2.7]
QID: B4537 (P4537)

A water storage tank is vented to atmosphere. The tank is located at sea level and contains 100,000 gallons of water at 80°F. A pressure gauge at the bottom of the tank reads 9.0 psig. What is the approximate water level in the tank?

A. 13 feet

B. 17 feet

C. 21 feet

D. 25 feet

ANSWER: C.

TOPIC: 293001
KNOWLEDGE: K1.03 [2.5/2.7]
QID: B4837 (P4837)

Refer to the drawing of two water storage tanks with four differential pressure (D/P) level detectors (see figure below).

The tanks are identical and are being maintained at 2 psig overpressure, the same constant water level, and a temperature of 60°F. The tanks are surrounded by atmospheric pressure. All level detectors have been calibrated and are producing the same level indication.

If a leak in the top of each tank causes a complete loss of overpressure in both tanks, which detector(s) will produce the highest level indication(s)?

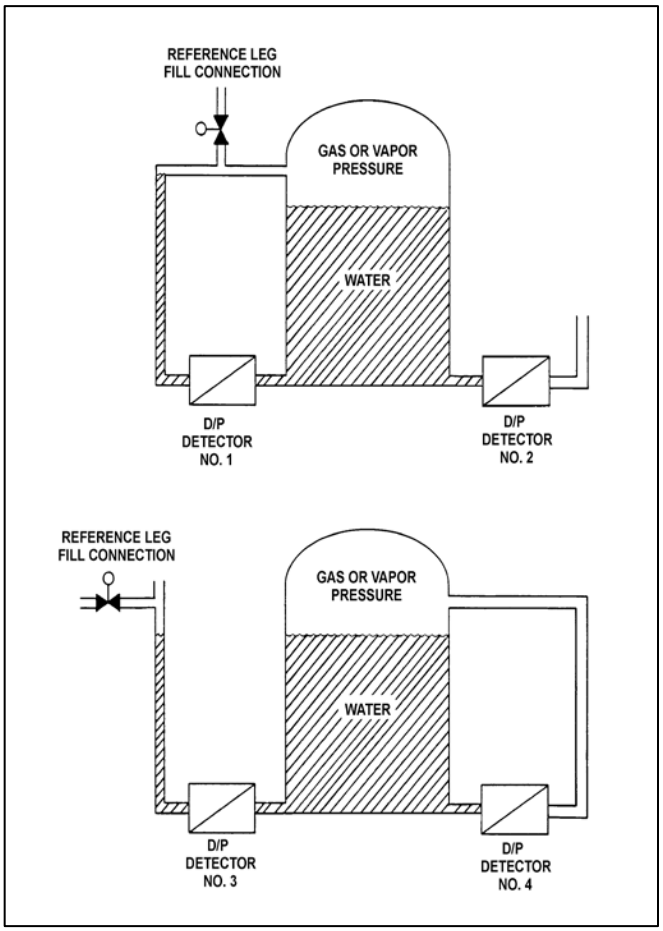
A. No. 1 only

B. No. 2 only

C. No. 1 and 4

D. No. 2 and 3

ANSWER: C.



TOPIC: 293001
KNOWLEDGE: K1.03 [2.5/2.7]
QID: B5837 (P5837)

Refer to the drawing of an open water storage tank with a differential pressure (D/P) level indicator that is vented to atmosphere (see figure below). Both the tank and the level indicator are surrounded by standard atmospheric pressure. Tank water temperature is 70°F.

The D/P level indicator is sensing a differential pressure of 4.0 psi. What is the water level in the tank above the instrument penetration?

A. 9.2 feet

B. 16.7 feet

C. 24.7 feet

D. 43.2 feet

ANSWER: A.