

**Example 3:** An aircraft is parked at an aerodrome overnight. When it arrived the previous evening the QNH of 1020 hPa was set, however, the next day the QNH is reported to be 1010 hPa. What is the indicated altitude with the QNH from the previous evening set?

Indicated altitude, when the aircraft landed, was equal to the aerodrome elevation.

The change of altitude equivalent to 10 hPa is:  $10 \text{ hPa} \times 27 \text{ ft/hPa} = 270 \text{ ft}$

Since the pressure is lower, the distance from the aircraft to the 1020 hPa pressure surface is greater, which means the indicated altitude has increased by 270 ft giving an indicated altitude of aerodrome elevation + 270 ft.

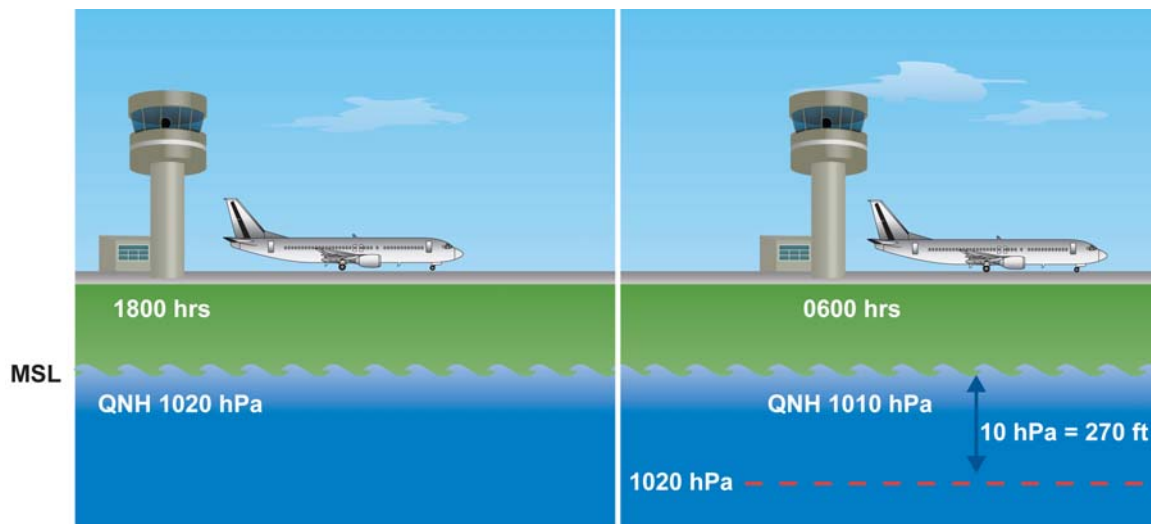


Figure 7.3 – Illustration for example question 3

**Example 4:** An aircraft is flying at 500 ft indicated altitude with an altimeter setting of 1035 hPa. The altimeter setting was obtained as the QFE for an aerodrome. The aircraft flies to another area with the same terrain elevation where the QFE is 1021 hPa without changing the altimeter setting. What is the height of the aircraft over this area assuming ISA temperature?

The change of altitude equivalent to 14 hPa is:  $14 \text{ hPa} \times 27 \text{ ft/hPa} = 378 \text{ ft}$

Since the aircraft is flying towards lower pressure, the height will decrease.

The new height of the aircraft is:  $500 \text{ ft} - 378 \text{ ft} = 122 \text{ ft}$

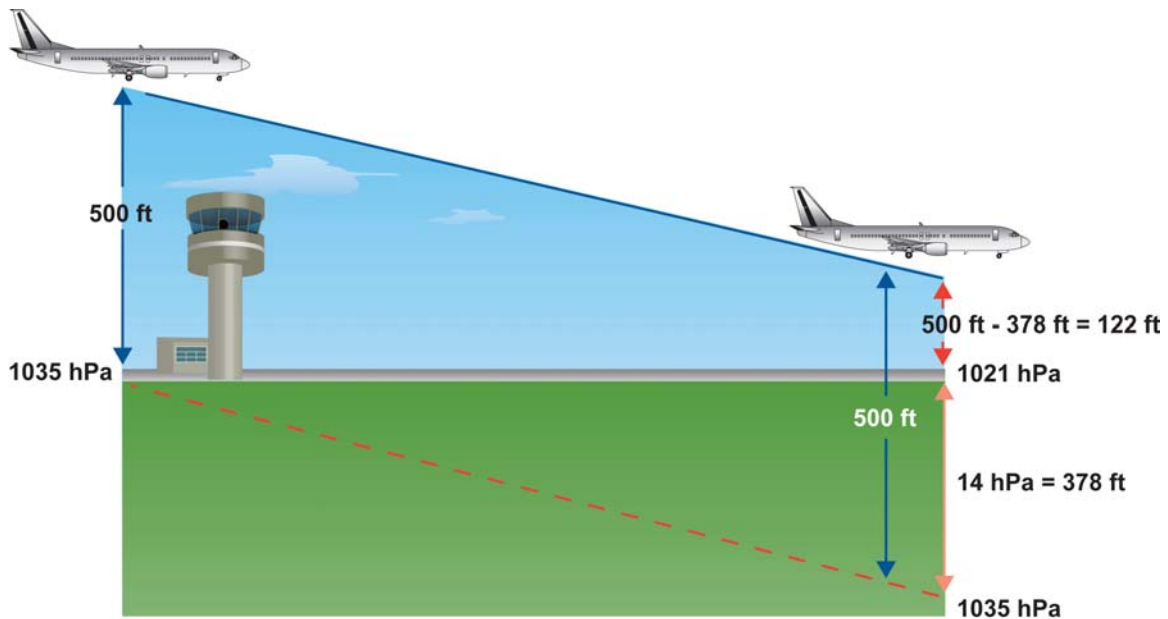


Figure 7.4 – Illustration for example question 4

**Example 5:** An aircraft is flying at a constant true altitude of 6000 ft. A nearby aerodrome with an elevation of -162 ft reports a QFE of 1037 hPa. Assuming ISA temperature and the no pressure changes within the area, what is the indicated altitude if the altimeter setting is standard?

There are two ways to calculate this, one which goes via QNH and one where the QFE is used. Either of them will lead to the same answer and it is personal choice which one is used. Both will be shown here, starting with via QNH.

The change of pressure equivalent to 162 ft is:  $162 \text{ ft} \div 27 \text{ ft/hPa} = 6 \text{ hPa}$

The airfield is below MSL, making the QNH:  $1037 \text{ hPa} - 6 \text{ hPa} = 1031 \text{ hPa}$

The change of altitude equivalent to 18 hPa is:  $18 \text{ hPa} \times 27 \text{ ft/hPa} = 486 \text{ ft}$

Since the altimeter setting (1013 hPa) is lower than the QNH (1031 hPa), the altimeter pressure reference level is closer to the aircraft than MSL making the indicated altitude lower than the true altitude.

The indicated altitude is:  $6000 \text{ ft} - 486 \text{ ft} = 5514 \text{ ft}$

Using QFE and omitting calculating via QNH, the calculation is:

The change of altitude equivalent to:  $24 \text{ hPa} \times 27 \text{ ft/hPa} = 648 \text{ ft}$

The indicated altitude is:  $6000 \text{ ft} - (648 \text{ ft} - 162 \text{ ft}) = 5514 \text{ ft}$

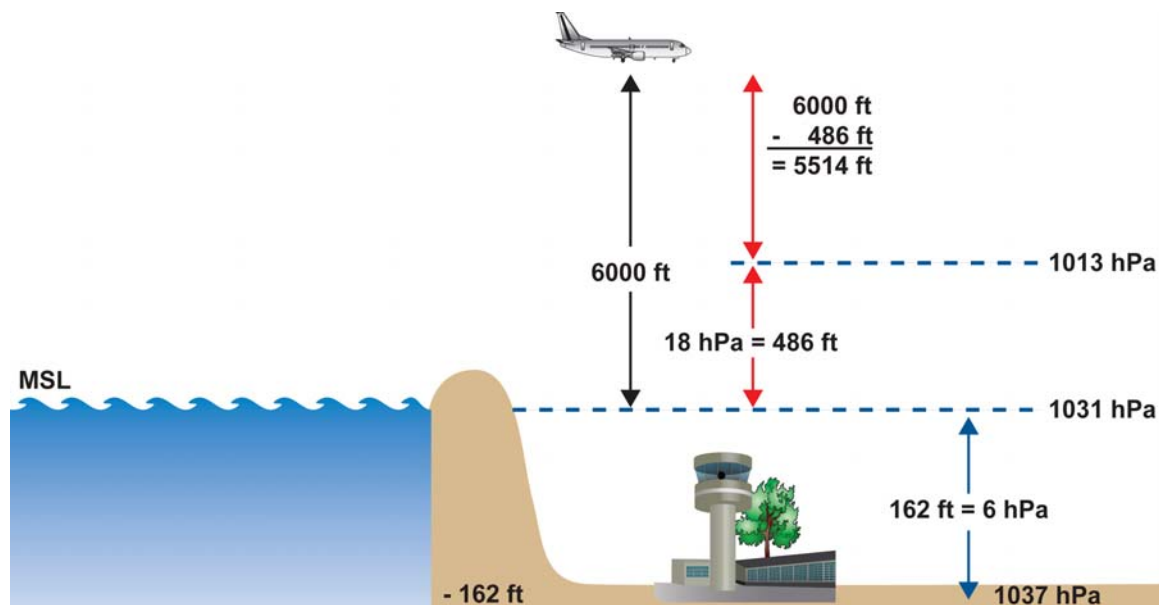


Figure 7.5 – Illustration for example question 5, calculating via QNH