can be employed: “FROM HOT TO COLD, LOOK OUT BELOW.” When the air is warmer than standard, the aircraft is higher than the altimeter indicates. Altitude corrections for temperature can be computed on the navigation computer.

Extremely cold temperatures also affect altimeter indications. *Figure 8-4,* which was derived from ICAO formulas, indicates how much error can exist when the temperature is extremely cold.

Setting the Altimeter

Most altimeters are equipped with a barometric pressure setting window (or Kollsman window) providing a means to adjust the altimeter. A knob is located at the bottom of the instrument for this adjustment.

To adjust the altimeter for variation in atmospheric pressure, the pressure scale in the altimeter setting window, calibrated in inches of mercury ("Hg) and/or millibars (mb), is adjusted to match the given altimeter setting. Altimeter setting is defined as station pressure reduced to sea level, but an altimeter setting is accurate only in the vicinity of the reporting station. Therefore, the altimeter must be adjusted as the flight progresses from one station to the next. Air traffic control (ATC) will advise when updated altimeter settings are available. If a pilot is not utilizing ATC assistance, local altimeter settings can be obtained by monitoring local automated weather observing system/automated surface observation system (AWOS/ASOS) or automatic terminal information service (ATIS) broadcasts.

Many pilots confidently expect the current altimeter setting will compensate for irregularities in atmospheric pressure at all altitudes, but this is not always true. The altimeter setting broadcast by ground stations is the station pressure corrected to mean sea level. It does not account for the irregularities at higher levels, particularly the effect of nonstandard temperature. If each pilot in a given area is using the same altimeter setting, each altimeter should be equally affected by temperature and pressure variation errors, making it possible to maintain the desired vertical separation between aircraft. This does not guarantee vertical separation though. It is still imperative to maintain a regimented visual scan for intruding air traffic.

Reported Temp 0 °C	Height Above Airport in Feet													
	200													
+10	10	10	10	10	20	20	20	20	20	30	40	60	80	90
0	20	20	30	30	40	40	50	50	60	90	120	170	230	280
-10	20	30	40	50	60	70	80	90	100	150	200	290	390	490
-20	30	50	60	70	90	100	120	130	140	210	280	420	570	710
-30	40	60	80	100	120	140	150	170	190	280	380	570	760	950
-40	50	80	100	120	150	170	190	220	240	360	480	720	970	1,210
-50	60	90	120	150	180	210	240	270	300	450	590	890	1,190	1,500

Figure 8-4. *Look at the chart using a temperature of –10 °C and an aircraft altitude of 1,000 feet above the airport elevation. The chart shows that the reported current altimeter setting may place the aircraft as much as 100 feet below the altitude indicated by the altimeter.*

When flying over high, mountainous terrain, certain atmospheric conditions cause the altimeter to indicate an altitude of 1,000 feet or more higher than the actual altitude. For this reason, a generous margin of altitude should be allowed—not only for possible altimeter error, but also for possible downdrafts that might be associated with high winds.

To illustrate the use of the altimeter setting system, follow a flight from Dallas Love Field, Texas, to Abilene Municipal Airport, Texas, via Mineral Wells. Before taking off from Love Field, the pilot receives a current altimeter setting of 29.85 "Hg from the control tower or ATIS and sets this value in the altimeter setting window. The altimeter indication should then be compared with the known airport elevation of 487 feet. Since most altimeters are not perfectly calibrated, an error may exist.

When over Mineral Wells, assume the pilot receives a current altimeter setting of 29.94 "Hg and sets this in the altimeter window. Before entering the traffic pattern at Abilene Municipal Airport, a new altimeter setting of 29.69 "Hg is received from the Abilene Control Tower and set in the altimeter setting window. If the pilot desires to fly the traffic pattern at approximately 800 feet above the terrain, and the field elevation of Abilene is 1,791 feet, an indicated altitude of 2,600 feet should be maintained (1,791 feet + 800 feet = 2,591 feet, rounded to 2,600 feet).

The importance of properly setting the altimeter cannot be overemphasized. Assume the pilot did not adjust the altimeter at Abilene to the current setting and continued using the Mineral Wells setting of 29.94 "Hg. When entering the Abilene traffic pattern at an indicated altitude of 2,600 feet, the aircraft would be approximately 250 feet below the proper traffic pattern altitude. Upon landing, the altimeter would indicate approximately 250 feet higher than the field elevation.

Mineral Wells altimeter setting	29.94
Abilene altimeter setting	29.69
Difference	0.25

(Since 1 inch of pressure is equal to approximately 1,000 feet of altitude, 0.25 × 1,000 feet = 250 feet.)