

Picking tops

Geologists have long recognized lithostratigraphic units and given them names like "Old Red Sandstone" or "Garden City Formation". Subsurface geologists commonly extend recognition of these stratigraphic units into the subsurface, or they apply names or codes to stratigraphic units known only from the subsurface. Recognition of a stratigraphic unit typically involves recognizing the top of the unit, or "picking the top".

In the example at right, a geologist has marked and labeled his or her pick for the top of the fictional Bitma Shale or Bitma Formation in Borehole 1. In this easy example, one can readily find log excursions in Borehole 2, like those marked in green and magenta, to confirm the observation that the top of the Bitma in Borehole 2 is at about 980' downhole.

Thus far, the position of each pick is expressed relative to the datum of the borehole log. We commonly want to make structural maps of tops. To do so, we need to determine the position of the top relative to sea level. On the log of Borehole 1, the geologist has done his or her arithmetic on the log, subtracting the elevation of the log's datum to arrive at the elevation of the top of the Bitma relative to sea level. Old-fashioned geologists worked this way on paper and then transferred their tops to a map; modern procedure would likely involve entering the uncorrected tops of many units into a database, subtracting the datum elevation from all of them in one swoop, and having maps plotted with the tops (relative to sea level) shown for each well. From there the geologist would turn to contouring the structure maps, the subject of yet another PG&SG page.

