

## **REDISCOVERY OF THE ELEMENTS — ADDITIONAL EXPLANATORY NOTES (GEOGRAPHICAL LOCATIONS AND VIEWPOINTS)**

Geographical locations. Latitude and longitude of site, given to 0.01 minute arc ( $\leq 19$  meters), recorded on site by authors (a handful of exceptions includes such sites as Eniwetok Atoll; the placers of Chocó, Colombia; Guntūr, India; etc.). Where possible (i.e., a landmark could be identified) all readings were ultimately checked by Garmin maps and/or Google Earth (even though some readings were originally made before Google Earth was released in 2005).

Although both the precision and accuracy of GSP (Global Positioning Position system; WGS84, the latest World Geodetic System) are better than 0.01 minute arc, nevertheless higher precision is not given because (a) higher resolution is not needed to find a site and (b) commonly the exact location is ill defined (e.g., the broad entrance to a building; a large mining site; etc.).

The format of readings is hddd-mm.mm (with no degree symbols); for example, the location of the Ytterby Mine, Sweden — North 59 degrees 25.60 minutes, East 18 degrees 21.18 minutes — is listed as  
N59 25.60 E18 21.18 (in captions to figures)  
or  
N59-25.60 E18-21.18 (in tables).

The reason that the degree symbol has not used is because it does not reliably reproduce in different computer platforms and word processing programs, and hence can cause confusion. The final pdf tables apparently avoid this problem, but the same format is still used for consistency. It is to be noted that such programs as Google Earth do not require the degree symbol for data input.

In these listings of latitudes and longitudes, the datum method is the WGS84 system used in modern geodesy (all navigation and map-making). Although at first thought one might think this is obvious, nevertheless one must be careful: Because the earth is not a perfect sphere (and not even a perfect ellipsoid), different reference systems are possible, and the projection system used is necessarily arbitrary. For example, the authors noticed latitude and longitude reckonings at the Geneva (Switzerland) Museum of Science (painted on the pavement) were based on the older Potsdam-datum system, giving a disagreement of almost 100 meters with the WGS84 system.

Viewpoints in photographs. As often as possible in a panoramic scene, the orientation of the camera is given as a compass reading. The given direction means the direction the *camera is facing*. For example, “The view is south” means the viewer (camera) is facing to the south (and north is to the viewer's back). Although this may appear obvious, this

careful distinction is made to avoid any ambiguity: The authors have noticed that in the general literature, occasionally one ambiguously implies the orientation of the camera to the scene, i.e., the opposite compass direction.