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Salient points to remember when viewing the map of the insphered hexpenhedron.

1 All the sides or arcs of the hexagons and pentagons are equal, just like on the football, and they are aligned along great circle circumferences. The outermost circle is the magnified point of the north pole.
2 The hexagons are equal to each other and so are the pentagons, just like on the football. Thus the pentagon at the north pole is equal to the pentagon at the south pole.
3 Any point or arc has its corresponding antipodal counterpart.
4 The polar and equatorial circumferences are equal, measuring 40030.35 kms. each, and the superficial area is 510,069,522.8 sq. sq. kms., in conformity with a perfectly spherical earth.

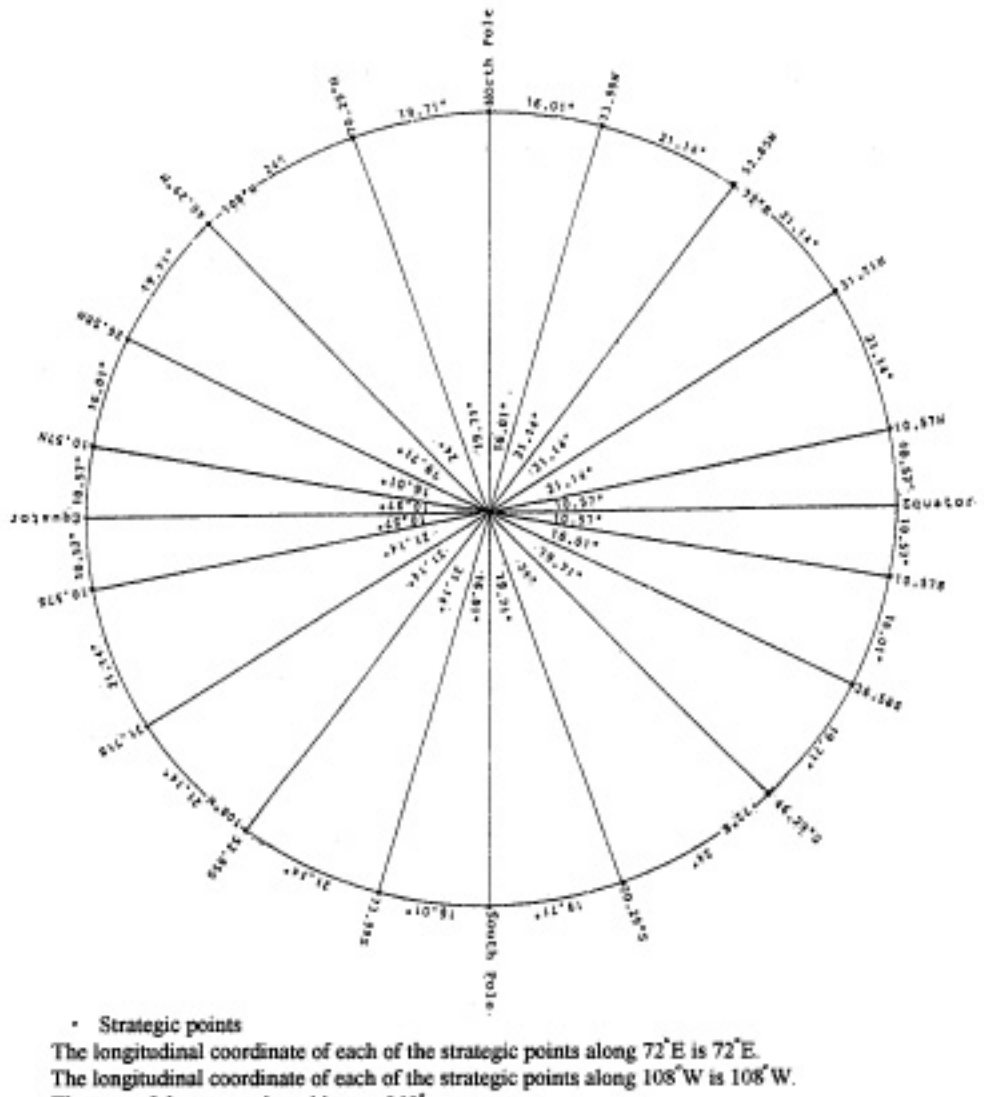
Component arc-angles of a great circle circumference (polar type)

An arc-angle is an arc on the earth's surface with a specific angular value denoting the angle it supports at the earth's centre. A polar type great circle circumference of the insphered hexpenhedron is composed of arc-angles going through two sides, the centres of pentagons and hexagons, through the midpoints of their sides, and vertices. It is given along meridians 108°W and 72°E which appears as a straight line on the map. They are inclusive of arc-angles connecting adjacent strategic points. An arc-angle connecting the centre of a hexagon to its apex also has a value of 24° because a hexagon is composed of six equilateral triangles. The route of a polar type circumference can be duplicated in a circular manner by other great circle circumferences, as shown in the map. The arc-angle from an apex of a pentagon to its opposite apex is 37.68° and the arc-angle connecting opposite apices of a hexagon is 48°.

Component arc-angles of a great circle circumference (equatorial type)

An equatorial type great circle circumference is composed of arc-angles going through midpoints of alternate sides of hexagons. It is divided into ten equal parts by the sides, and is therefore composed of ten equal arc-angles, each having a value of 36°. A meridian bisects each of the arcs. The route of the equatorial circumference via the hexagons can be duplicated by other great circle circumferences, as shown in the diagram.

Cross-section of a polar circumference as given along 108°W and 72°E, showing its component arc-angles



- Strategic points

The longitudinal coordinate of each of the strategic points along 72°E is 72°E.
The longitudinal coordinate of each of the strategic points along 108°W is 108°W.
The sum of the arc-angles add up to 360°.
Note that the strategic points and the arc-angles have their corresponding antipodal counterparts.

Measuring distances and areas on the earth using the insphered hexpenhedron is dealt with in the following articles. It is sufficient to mention herein that :

(a) a side of arc-angle 24° has a distance of 2668.69 kms. (between 2667.20 and 2671.67 kms in an oblate-spheroid earth).
(b) the greatest distance within an arced pentagon (arc-angle 37.68°) is 4191.01 kms. (between 4187.50 and 4194.53 kms.)
(c) the greatest distance within an arced hexagon (arc-angle 48°) is 5337.38 kms. (between 5334.40 and 5343.35 kms.)
(d) the area of an arced pentagon is approximately 12,084,291.72 sq. kms.
(e) the area of an arced hexagon is approximately 18,252,901.09 sq. kms.

For more details refer to "Arc-angle distances and areas table of the "hex-pen" grid superimposed onto the antipodes map".