

HARVARD COLLEGE OBSERVATORY

ANNOUNCEMENT CARD 1389

Satellite 1957a1.— According to Dr. L. G. Jacchia of the Astrophysical Observatory of the Smithsonian Institution, the following ephemeris represents with a fair degree of accuracy the equatorial crossings from the time of the launching to 1957 December 1.0, U.T., time of the last reliable observation:

$$T\Omega = 1957 \text{ Oct. } 9.82058 \text{ (U.T.)} + 0.96868222n - 1.47721\exp(0.00134n) - 1.754 \times 10^{-5}\exp(0.0102n) - 1.95 \times 10^{-10}\exp(0.039n)$$
$$a\Omega = 334.3 - 3.058 (t - \text{Oct. } 7.0) - 0.0041 (t - \text{Oct. } 7.0)^2 \text{ (t in days, U.T.)}$$

These equations were obtained from an analysis of approximately 300 sub-satellite points derived from visual and radio observations. The following elements were used in the computation of the sub-satellite points and nodes:

$$\omega = 46^\circ - 0.4 (t - \text{Oct. } 7.0); q = \text{const.} = 1.035 \text{ earth's equatorial radii}; i = 65.3$$

The plane of reference is the plane of the earth's equator.

n represents the number of revolutions elapsed since Oct. 8.34335 ($n = 0$)

January 31, 1958

FRED L. WHIPPLE