S1P-007-72
November 21, 1972

TO: CPME Distribution

FROM: T. P. Armstrong

SUBJECT: Explorer 47 R vs r

Attached sheets give formulas determined to fit laboratory calibration data. Additional detailed data is availabe in the S1P Group file.

TPA:dl
Distribution:

SMKrimigis
RECashion
SGary
RLMcCutcheon
JWKohl
JCrawford
TPArmstrong
COBostrom
Archives/2
File

November 17, 1972

Explorer 47

R vs r Formulas from C.D.W.

R ≡ true rate (c/sec)

r ≡ apparent rate (c/sec)

E1 $r \leq r_{max} = 29381$

$0 \leq r \leq 1313; R = r$

$1313 < r \leq 10535; R = 337.363 + 0.553686 + 0.000145\ r^2$

$10535 < r \leq 29381; \frac{1}{R} = \frac{1}{-1.6265 \times 10^{-5} + \frac{.4363945}{r} + \frac{2193.085}{r^2}}$

$29381 < r\ ;\ R = 29381$

E5 $0 \leq r \leq 1014; R = r$

$1014 < r \leq 7650; R = -110.35 + 1.1\ r + 8.67942 \times 10^{-6}\ r^2$

$7650 < r \leq 91680; \frac{1}{R} = \frac{1}{-6.61727 \times 10^{-6} + \frac{.92848}{r} - \frac{74.7931}{r^2}}$

$91680 < r; R = 91680$

E2A $0 \leq r \leq 1843; R = r$

$1843 < r \leq 9470; R = 1050.37 + 0.0355096\ r + 2.141 \times 10^{-4}\ r^2$

$9470 < r \leq 32518; \frac{1}{R} = \frac{1}{-1.0995463 \times 10^{-6} - \frac{.01264051}{r} + \frac{4574.4292}{r^2}}$

$32518 < r \leq 39,800; \frac{1}{R} = \frac{1}{1.81795 \times 10^{-5} + \frac{.94298876}{r} - \frac{8439.99}{r^2}}$

$39,800 < r;\ R = 39,800$

E2B $0 \leq r \leq 1508; R = r$

$1508 < r \leq 9542; \frac{1}{R} = \frac{1}{-4.141 \times 10^{-5} + \frac{.9016}{r} + \frac{242.7421}{r^2}}$

$9542 < r \leq 32527; R = 10,165.6 - 1.00769\ r + 1.91 \times 10^{-4}\ r^2$

$32527 < 4 \leq 58000; \frac{1}{R} = \dfrac{1}{-3.0196 \times 10^{-6} + \frac{.15223}{r} + \frac{4138.43}{r^2}}$

$58000 < r ; R = 58000$

E2C $0 \leq r \leq 1508; R = r$

$1508 < r \leq 9389; \frac{1}{R} = \dfrac{1}{-4.728 \times 10^{-5} + \frac{.9478}{r} + \frac{185.928}{r^2}}$

$9389 < r \leq 28290; \frac{1}{R} = \dfrac{1}{-7.3404 \times 10^{-6} + \frac{.3144}{r} + \frac{2612.0232}{r^2}}$

$28290 < r \leq 56000; \frac{1}{R} = \dfrac{1}{-2.669 \times 10^{-6} + \frac{.1085}{r} + \frac{4685.644}{r^2}}$

$56000 < r ; \quad R = 56000$

E3 $0 \leq r \leq 316; R = r$

$316 < r \leq 1100; R = -40.709 + 1.1242\, r + 1.4502 \times 10^{-5}\, r^2$

$1100 < r \leq 2708; R = 110.65 + .76396r + 2.1665 \times 10^{-4}\, r^2$

$2708 < r \leq 6273; \frac{1}{R} = \dfrac{1}{-2.7943 \times 10^{-4} + \frac{2.6360785}{r} - \frac{4838.0836}{r^2}}$

$6273 < r \quad ; R = 6273$

(omits falling part of R vs r)

E4 $0 \leq r \leq 1580; R = r$

$1580 < r \leq 7878; \frac{1}{R} = \dfrac{1}{-1.9198 \times 10^{-5} + \frac{1.04268}{r} - \frac{20.00282}{r^2}}$

$7878 < r \leq 77618; \frac{1}{R} = \dfrac{1}{-5.08159 \times 10^{-6} + \frac{.91343}{r} + \frac{122.2628}{r^2}}$

$77618 < r \leq 120,666; \frac{1}{R} = \dfrac{1}{6.150273 \times 10^{-6} + \frac{.93014}{r} + \frac{5263.6494}{r^2}}$

$120666 < r \quad ; \quad R = 120666$

E6 $0 \leq r \leq 264; R = r$

$264 < r \leq 11207; R = -33 + 1.1211\, r + 1.5513 \times 10^{-5}\, r^2$

$$11207 < r \leq 34120 \quad \frac{1}{R} = \frac{1}{-1.999 \times 10^{-5} + \frac{1.067}{r} - \frac{773.4}{r^2}}$$

$34120 < r \quad ; \quad R = 34120$

B0 $\quad 0 \leq r \leq 2095 \quad R = 4$

$2095 < r \leq 13679 ; R = -278.4 + 1.13\, r + 1.43929 \times 10^{-6}\, r^2$

$13679 < 4 \leq 109272 ; R = 1942.1 + .8879r + 7.27 \times 10^{-6}\, r^2$

$109272 < r \leq 172626 ; R = 232190.4 - 4.6227\, r + 3.8417 \times 10^{-5}\, r^2$

$172626 < r \quad ; \quad R = 172626$