$$D = 10 \log \left[\left(\frac{1}{T} \right) \int_{t(1)}^{t(2)} \text{antilog} \frac{PNLT}{10} dt \right] - PNLTM$$

where T is a normalizing time constant, PNLTM is the maximum value of PNLT, t(1) is the first point of time after which PNLT becomes greater than PNLTM–10, and t(2) is the point of time after which PNLT remains constantly less than PNLTM–10.

A36.4.5.2 Since PNLT is calculated from measured values of sound pressure level (SPL), there is no obvious equation for PNLT as a function of time. Consequently, the equation is to be rewritten with a summation sign instead of an integral sign as follows:

$$D = 10 \log \left[\left(\frac{1}{T} \right) \sum_{k=0}^{d/\Delta t} \Delta t . \text{antilog} \frac{PNLT(k)}{10} \right] - PNLTM$$

where Δt is the length of the equal increments of time for which PNLT(k) is calculated and d is the time interval to the nearest 0.5s during which PNLT(k) remains greater or equal to PNLTM–10.

A36.4.5.3 To obtain a satisfactory history of the perceived noise level use one of the following:

(a) Half-Second time intervals for Δt; or

(b) A shorter time interval with approved limits and constants.

A36.4.5.4 The following values for T and Δt must be used in calculating D in the equation given in section A36.4.5.2:

T = 10 s, and

Δt = 0.5s (or the approved sampling time interval).

Using these values, the equation for D becomes:

$$D = 10 \log \left[\sum_{k=0}^{2d} \text{antilog} \frac{PNLT(k)}{10} \right] - PNLTM - 13$$

where d is the duration time defined by the points corresponding to the values PNLTM–10.

A36.4.5.5 If in using the procedures given in section A36.4.5.2, the limits of PNLTM–10 fall between the calculated PNLT(k) values (the usual case), the PNLT(k) values defining the limits of the duration interval must be chosen from the PNLT(k) values closest to PNLTM–10. For those cases with more than one peak value of PNLT(k), the applicable limits must be chosen to yield the largest possible value for the duration time.

A36.4.6 *Effective perceived noise level.*

The total subjective effect of an airplane noise event, designated effective perceived noise level, EPNL, is equal to the algebraic sum of the maximum value of the tone-corrected perceived noise level, PNLTM, and the duration correction D. That is:

EPNL = PNLTM + D

where PNLTM and D are calculated using the procedures given in sections A36.4.2, A36.4.3, A36.4.4. and A36.4.5.

A36.4.7 *Mathematical formulation of noy tables.*

A36.4.7.1 The relationship between sound pressure level (SPL) and the logarithm of perceived noisiness is illustrated in Figure A36–3 and Table A36–3.

A36.4.7.2 The bases of the mathematical formulation are:

(a) The slopes (M(b), M(c), M(d) and M(e)) of the straight lines;

(b) The intercepts (SPL(b) and SPL(c)) of the lines on the SPL axis; and

(c) The coordinates of the discontinuities, SPL(a) and log n(a); SPL(d) and log n = −1.0; and SPL(e) and log n = log (0.3).

A36.4.7.3 Calculate noy values using the following equations:

(a)

SPL ≥SPL (a)

n = antilog {(c)[SPL − SPL(c)]}