photocopying by representatives of the FRA.

(3) *Transfer of records.* If a railroad ceases to do business, it shall transfer to the successor employer all records required to be maintained under this subpart, and the successor employer shall retain them for the remainder of the period prescribed in this part.

(b) *Exposure measurements records.* The railroad shall:

(1) Maintain an accurate record of all employee exposure measurements required by §227.103; and

(2) Retain these records for the duration of the covered employee's employment plus thirty years.

(c) *Audiometric test records.* The railroad shall:

(1) Maintain employee audiometric test records required by §227.109, including:

(i) The name and job classification of the employee;

(ii) The date of the audiogram;

(iii) The examiner's name;

(iv) The date of the last acoustic or exhaustive calibration of the audiometer;

(v) Accurate records of the measurements of the background sound pressure levels in audiometric test rooms;

(vi) The model and serial number of the audiometer used for testing; and

(2) Retain the records required by §227.107 for the duration of the covered employee's employment plus thirty years.

(d) *Positions and persons designated records.* The railroad shall:

(1) Maintain a record of all positions or persons or both designated by the railroad to be placed in a Hearing Conservation Program pursuant to §227.107; and

(2) Retain these records for the duration of the designation.

(e) *Training program materials records.* The railroad shall:

(1) Maintain copies of all training program materials used to comply with §227.119(c) and a record of employees trained; and

(2) Retain these copies and records for three years.

(f) *Standard threshold shift records.* The railroad shall:

(1) Maintain a record of all employees who have been found to have experienced a standard threshold shift within the prior calendar year and include all of the following information for each employee on the record:

(i) Date of the employee's baseline audiogram;

(ii) Date of the employee's most recent audiogram;

(iii) Date of the establishment of a standard threshold shift;

(iv) The employee's job code; and

(v) An indication of how many standard threshold shifts the employee has experienced in the past, if any; and

(2) Retain these records for five years.

APPENDIX A TO PART 227—NOISE EXPOSURE COMPUTATION

This appendix is mandatory.

I. COMPUTATION OF EMPLOYEE NOISE EXPOSURE

A. Noise dose is computed using Table A–1 as follows:

1. When the sound level, L, is constant over the entire work day, the noise dose, D, in percent, is given by: D = 100 C/T, where C is the total length of the work day, in hours, and T is the duration permitted corresponding to the measured sound level, L, as given in Table A–1.

2. When the work day noise exposure is composed of two or more periods of noise at different levels, the total noise dose over the work day is given by:

D = 100 (C1/T1 + C2/T2 + . . . + Cn/Tn), where Cn indicates the total time of exposure at a specific noise level, and Tn indicates the duration permitted for that level as given by Table A–1.

B. The eight-hour TWA in dB may be computed from the dose, in percent, by means of the formula: TWA = 16.61 log10 (D/100) + 90. For an eight-hour work day with the noise level constant over the entire day, the TWA is equal to the measured sound level.

C. Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

D. Any time that an employee spends deadheading shall be included in the calculation of the noise dose.

E. A table relating dose and TWA is given in Section II of this Appendix.

TABLE A–1 [1]

A-weighted sound level, L (decibel)	Duration permitted T (hour)
80	32
81	27.9

TABLE A–1 [1]—Continued

A-weighted sound level, L (decibel)	Duration permitted T (hour)
82	24.3
83	21.1
84	18.4
85	16
86	13.9
87	12.1
88	10.6
89	9.2
90	8
91	7.0
92	6.1
93	5.3
94	4.6
95	4
96	3.5
97	3.0
98	2.6
99	2.3
100	2
101	1.7
102	1.5
103	1.3
104	1.1
105	1
106	0.87
107	0.76
108	0.66
109	0.57
110	0.5
111	0.44
112	0.38
113	0.33
114	0.29
115	0.25
116	*0.22*
117	*0.19*
118	*0.16*
119	*0.14*
120	*0.125*
121	*0.11*
122	*0.095*
123	*0.082*
124	*0.072*
125	*0.063*
126	*0.054*
127	*0.047*
128	*0.041*
129	*0.036*
130	*0.031*
140	*0.078*

[1] Numbers above 115 dB(A) are italicized to indicate that they are noise levels that are not permitted. The italicized numbers are included only because they are sometimes necessary for the computation of noise dose.

In the above table the duration permitted, T, is computed by

$$T = \frac{8}{2^{(L-90)/5}}$$

where L is the measured A-weighted sound level.

II. CONVERSION BETWEEN ''DOSE'' AND ''8-HOUR TIME-WEIGHTED AVERAGE'' SOUND LEVEL

A. Compliance with subpart B of part 227 is determined by the amount of exposure to noise in the workplace. The amount of such exposure is usually measured with a dosimeter which gives a readout in terms of ''dose.'' In order to better understand the requirements of the regulation, dosimeter readings can be converted to an ''8-hour TWA.''

B. In order to convert the reading of a dosimeter into TWA, see Table A–2, below. This table applies to dosimeters that are set by the manufacturer to calculate dose or percent exposure according to the relationships in Table A–1. So, for example, a dose of 91 percent over an eight-hour day results in a TWA of 89.3 dB, and a dose of 50 percent corresponds to a TWA of 85 dB.

C. If the dose as read on the dosimeter is less than or greater than the values found in Table A–2, the TWA may be calculated by using the formula: TWA = 16.61 log10 (D/100) + 90 where TWA = 8-hour time-weighted average sound level and D = accumulated dose in percent exposure.

TABLE A–2—CONVERSION FROM ''PERCENT NOISE EXPOSURE'' OR ''DOSE'' TO ''8-HOUR TIME-WEIGHTED AVERAGE SOUND LEVEL'' (TWA)

Dose or percent noise exposure	TWA
10	73.4
15	76.3
20	78.4
25	80.0
30	81.3
35	82.4
40	83.4
45	84.2
50	85.0
55	85.7
60	86.3
65	86.9
70	87.4
75	87.9
80	88.4
81	88.5
82	88.6
83	88.7
84	88.7
85	88.8
86	88.9
87	89.0
88	89.1
89	89.2
90	89.2
91	89.3
92	89.4
93	89.5
94	89.6
95	89.6
96	89.7
97	89.8
98	89.9
99	89.9

TABLE A–2—CONVERSION FROM "PERCENT NOISE EXPOSURE" OR "DOSE" TO "8-HOUR TIME-WEIGHTED AVERAGE SOUND LEVEL" (TWA)—Continued

Dose or percent noise exposure	TWA
100	90.0
101	90.1
102	90.1
103	90.2
104	90.3
105	90.4
106	90.4
107	90.5
108	90.6
109	90.6
110	90.7
111	90.8
112	90.8
113	90.9
114	90.9
115	91.1
116	91.1
117	91.1
118	91.2
119	91.3
120	91.3
125	91.6
130	91.9
135	92.2
140	92.4
145	92.7
150	92.9
155	93.2
160	93.4
165	93.6
170	93.8
175	94.0
180	94.2
185	94.4
190	94.6
195	94.8
200	95.0
210	95.4
220	95.7
230	96.0
240	96.3
250	96.6
260	96.9
270	97.2
280	97.4
290	97.7
300	97.9
310	98.2
320	98.4
330	98.6
340	98.8
350	99.0
360	99.2
370	99.4
380	99.6
390	99.8
400	100.0
410	100.2
420	100.4
430	100.5
440	100.7
450	100.8
460	101.0
470	101.2
480	101.3
490	101.5
500	101.6

TABLE A–2—CONVERSION FROM "PERCENT NOISE EXPOSURE" OR "DOSE" TO "8-HOUR TIME-WEIGHTED AVERAGE SOUND LEVEL" (TWA)—Continued

Dose or percent noise exposure	TWA
510	101.8
520	101.9
530	102.0
540	102.2
550	102.3
560	102.4
570	102.6
580	102.7
590	102.8
600	102.9
610	103.0
620	103.2
630	103.3
640	103.4
650	103.5
660	103.6
670	103.7
680	103.8
690	103.9
700	104.0
710	104.1
720	104.2
730	104.3
740	104.4
750	104.5
760	104.6
770	104.7
780	104.8
790	104.9
800	105.0
810	105.1
820	105.2
830	105.3
840	105.4
850	105.4
860	105.5
870	105.6
880	105.7
890	105.8
900	105.8
910	105.9
920	106.0
930	106.1
940	106.2
950	106.2
960	106.3
970	106.4
980	106.5
990	106.5
999	106.6

APPENDIX B TO PART 227—METHODS FOR ESTIMATING THE ADEQUACY OF HEARING PROTECTOR ATTENUATION

This appendix is mandatory.

Employers must select one of the following three methods by which to estimate the adequacy of hearing protector attenuation.

I. DERATE BY TYPE

Derate the hearing protector attenuation by type using the following requirements:

A. Subtract 7 dB from the published Noise Reduction Rating (NRR).