

APPENDIX B

PROCEDURE FOR DETERMINING RISK ASSESSMENT CODES
IN NOISE HAZARDOUS AREAS

B-1. A Risk Assessment Code (RAC), as defined in reference f to include a cost effective index, will be assigned to all noise-hazardous areas to aid in establishing priorities for implementing engineering control measures. They will be based on exposure to personnel if hearing protection is not worn, and will depend on both the intensity and durations of the noise exposure. The RAC assigned will fall into one for two categories: RAC 2 (IIB, Significant hearing loss will probably occur) which applies to noise hazardous areas where the 8-hr TWA noise exposure equals or exceeds 85dB(A) as computed using Table B-1, or RAC 4 (IIIC, Midl hearing loss may occur in time) which applies to areas where the 8-hr TWA noise exposure is less than 85dB(A). All sound level measurements must be precise since they are used to determine inclusion in the Hearing Conservation program and type of hearing protective devices to be used, whereas a reasonable approximation of the duration of exposure will suffice for the purpose of determining into which of the two RAC categories the noise exposure falls. The RAC number and other factors listed in para 10 of this document should be considered in assigning priorities for implementing engineering control measures.

B-2. Assigning a RAC when a sound level meter is used for noise measurements. Sufficient noise measurements should be made to be able to reasonably approximate the exposure time at various noise levels. The exposure to work place noise in any 24-hour period is then calculated according to the following formula:

$$\text{Noise Dose} = \frac{A_1}{T_1} + \frac{A_2}{T_2} + \dots + \frac{A_n}{T_n}$$

where A is the approximate total time of exposure in minutes at a particular noise Level L, and T is the time limit value in minutes for a particular noise level L. The limiting values T for any noise level L are listed in Table B-1. If the calculated noise dose is less than 1.0, this corresponds to an 8-hr TWA<85. If the calculated exposure is 1.0 or greater, this corresponds to an 8-hr TWA>85dB(A).

B-3. Assigning a RAC when a noise analyzer/dosimeter is used. Sufficient measurement in time should be allowed to project the work day noise equivalent or noise does.

B-4. A Cost Effectiveness Index (CEI) will be calculated as defined in AR 385-10.

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Table B-1. Time Limiting Values, T, For Various Values of Noise Level

<u>Noise Level dBA</u>	<u>Value of T, min</u>	<u>Noise Level dBA</u>	<u>Value of T, min</u>
80	No Limit	99	42
81	960	100	36
82	807	101	30
83	679	102	25
84	571	103	21
85	480	104	18
86	404	105	15
87	339	106	12.6
88	285	107	10.6
89	240	108	9
90	202	109	7.5
91	170	110	6.3
92	143	111	5.3
93	120	112	4.5
94	101	113	3.7
95	85	114	3.1
96	71	115	2.6
97	60	116	2.2
98	50	117 or greater	RAC 2 any exposure

B-5. Examples.

Job: Oiler on a diesel-powered bankgrader.

Duties: Check and lubricate equipment in the revolving superstructure of the bankgrader. This consists of an equipment check every hour which takes approximately 5 minutes. The remainder of the time he is on standby on the catwalk outside the superstructure. The oiler works a ten-hour day, which includes an hour for lunch and two 15 minute breaks.

1. Sound Level Meter Method.

Sound level measurements.

110dB(A) inside the superstructure.

106dB(A) on the catwalk.

Workplace noise exposure.

5 minutes/check X 9 checks/day = 45 minutes/day at 110dB(A).
600 minutes/work day - 90 minutes for lunch & breaks - 45 minutes inside superstructure = 465 minute/day at 106dB(A).

From the equation

$$\text{Work Day Exposure} = \frac{A_1}{T_1} + \frac{A_2}{12} \dots \frac{A_n}{T_n} \text{ and Table B-1}$$

$$\text{the work Day Exposure} = \frac{45}{6.3} + \frac{465}{12.6} = 44 > 1,$$

therefore a RAC 2 is assigned.

2. Analyzer/Dosimeter, Noise Equivalent (Leq) Method.

Exposure measurement.

60 minute measurement of one work cycle (equipment check and standby time gives a noise equivalent (Leq) of 107 dB(A).

Workplace Noise Exposure.

600 minute work day - 90 minutes for lunch and breaks = 510 minutes/day at Leq of 107 dB(A).

From the equation

$$\text{Work day Exposure} = \frac{A_1}{T_1} + \frac{A_2}{T_2} \dots \frac{A_n}{T_n} \text{ and Table B-1}$$

$$\text{Work day Exposure} = \frac{510}{10.6} = 48 > 1,$$

therefore a RAC 2 is assigned.

3. Analyzer/Dosimeter Noise Dose Method.

Exposure measurement.

60 minute measurement of one work cycle (equipment check and standby time give a noise dose of 5.7)

Workplace noise exposure.

600 minute work day - 90 minutes for lunch and breaks = 510 minutes/day at a noise dose of 5.7

$$\frac{5.7}{60} \times 510 \text{ minutes/day} = 48 > 1, \text{ therefore a RAC of 2 is assigned.}$$