

Chapter 3

Evaluation of Industrial Noise in the Oil and Gas Industry

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§ 3.01. Sound, Noise and Vibration.**[1] — Noise *cf.* Sound.**

Noise is, generally, “any unwanted sound,” and precisely, “audible acoustic energy that adversely affects the physiological or psychological wellbeing of humans.” Noise is sound that contains no information or aesthetic content or interferes with communication or other desirable activity (*e.g.*, sleep).¹

Sound and noise are described in terms of three variables: (1) amplitude (perceived loudness expressed in engineering units of decibels — a dimensionless, logarithmic unit); (2) frequency (expressed in engineering units of Hertz (*Hz*) or cycles per second (*cps*)); and (3) temporal pattern — constant, intermittent, or impulsive — expressed in seconds (or fractions thereof), minutes, and hours.²

Noise may be sinusoidal (*i.e.*, a single frequency and amplitude); tonal (*i.e.*, having a dominant frequency and relatively invariable amplitude); or random (complex variations in frequency and amplitude). The perception of sound as “noise” is a subjective psychological reaction to a physical stimulus.³

[2] — Low Frequency Noise and Infrasound .

Infrasound is sound below the human auditory threshold (optimally 20-20,000 Hz in a young, healthy person). Infrasound is in the inaudible spectrum from 0.1-20 Hz (*i.e.*, infrasonic).⁴ *Low frequency noise* (LFN) is low frequency spectral content (~20-200 Hz) in the audible spectrum.⁵

¹ See generally, Kryter, KD, 1985, *The Effects of Noise on Man*, 2d Ed., in Ch. 1, “Definitions of Noise and Noise Pollution,” 1-3, Academic Press, Inc., Orlando, FL.

² *Id.*

³ *Id.*

⁴ Hessler, G, Leventhal, G, Schomer, P and Walker, B, 2017, *Health Effects from Wind Turbine Low Frequency Noise and Infrasound*, *Sound & Vibration*, January 2017, www.SandV.com.

⁵ *Id.*