

UPDATE TO NOISE CONTROL DIRECTIVE ID 88-1

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Introduction

The ERCB has authored and enforced a number of Noise Control Directives for the energy industry since 1973. The most recent of these is Interim Directive ID 88-1. This Directive evolved from a common realisation that previous directives were too simplistic with their singular maximum day and night-time sound levels. The development of ID 88-1 sought to incorporate input from all appropriate stakeholders in noise problems generated by energy industry developments in the province of Alberta. To accomplish this, a committee comprised of members from the public, industry, acoustical consultants, university academics and governmental agencies was struck with co-ordination provided by the ERCB. The resulting Directive tries to take a balanced viewpoint of all these potential players through a reasonable unbiased policy.

The new Noise Control Directive and its accompanying handbook Guide G-38 were issued at the end of September 1988 with the specified condition that it must be reviewed after a 2-year period. The complexity of the Directive required this test period, so that flaws and shortcomings in the workability and effectiveness of the Directive would be identified and brought back to committee for review and change, if necessary.

Highlights of the Noise Control Directive

The predecessors to the existing Directive were ID 73-1 and later ID 80-2 which gave 65 dBA day-time and 50 dBA night-time maximum noise levels measured in proximity to a complainant's residence. These were one-page documents while today's Directive is nine pages long with an accompanying guide that is thirty pages long. Determining whether a facility is in violation of the Noise Control Directive is not as simple as taking a number of spot noise level readings and matching these against some scale but rather following a step process which assesses the extent of the problem using a number of applicable criteria.

To give you some insight into how this is achieved, it is necessary to first calculate the Permissible Sound Level. The Permissible Sound Level as defined in the Directive represents the "maximum allowable sound level emanating from the facility measured 15 metres from the nearest or most impacted dwelling in the direction of the source". This calculation starts with the Basic Sound Level determination using a table, representing the night-time values, which evaluates the residence on its proximity to sources of transportation noises and dwelling unit density. In addition, there is a 5 dBA allowance incorporated into the Basic Sound Level to account for industrial presence. If day-time noise is an issue, a value of 10 dBA can be added realizing that this is typically noisier than night-time. There are then two sets of adjustments that can be added, one for specific aspects of the facility and environment and the second adjustment for whether or not the noise source is of a temporary duration. All values are presented in dBA Leq and can vary significantly depending on the above criteria.

Of these sets of adjustments, the Class A adjustment takes into consideration three factors. The first is a seasonal assessment for predominantly winter-time noises, the second is applicable only when audible characteristics of a permanent facility are absent of both tonal and impulse/impact components and the third one is an ambient monitoring adjustment which allows for an incremental change of the Basic Sound Level to reflect characteristics of the actual ambient sound environment. This third factor can be used only when it is proven through a 24-hour continuous sound monitoring survey that the Basic Sound Levels assumed for the area are significantly different than the true ambient sound levels measured through the survey.

The second set or Class B adjustment values involves the duration of the noise source. For short duration activities, specifically those of either less than 1 day, 1 week or 2 months, a factor can be added to allow for the temporary nature of the noise source. A maximum Permissible Sound Level is subsequently derived not to exceed 66 dBA after all adjustments have been taken into consideration. The only exception to this is that the Permissible Sound Levels do not apply for an emergency situation which are "unplanned events requiring immediate action to prevent loss of life or property".

The Directive is very explicit in the way it is to be applied. In the case of a complaint, the Comprehensive Sound Level from the suspect energy facility must be determined using appropriate measurement instrumentation and techniques. It must also be of a certain duration in length, no less than 6 hours and no more than 24 hours, as well as being performed under representative portions of the time of day or night on typical days when the noise causing the complaints occur.

Also contained in the Directive is the option to use an appropriate isolation analysis technique when it appears the facility's noise contribution to the Comprehensive Sound Level may be in fact below the Permissible Sound Level. If this were the case, further action may not be required by the facility owner.

Finally, the Directive notes that some "grey" areas may exist and there will be situations which do not fit into the categories that have been identified. These exceptional cases will be reviewed by the ERCB on an individual basis and if necessary, alter the Permissible Sound Level to a higher or lower limit accordingly. In all situations, the results of the Comprehensive Sound Level Survey as compared to the calculated Permissible Sound Level establishes whether or not a facility is in compliance with the Directive.

Directive Review Process

Since the Directive has been in effect, industry and the ERCB have jointly dealt with approximately 150 noise complaints. In the course of dealing with these, a great deal of experience in working with this Directive has been gained with the realization that some refinements are in fact required. The original working committee was reconvened in mid-January 1991. A complete review of the Directive was initiated looking at all facets and assumptions used in the so-called pass/fail criteria. The overall consensus is that all parties are satisfied that the table format and the numbers in them are working reasonably well. There were, however, a number of concerns which will need to be addressed, the most important of these are:

- Many of the committee's participants felt that there were too many uncontrollable or unknown factors that affect noise survey results especially where a facility either marginally fails or passes. Again, it was felt that the Directive should more clearly spell out what would happen on these marginal cases including some kind of mechanism for resolutions. The ERCB recognizes that marginal cases do exist and will have to be dealt with under a dispute resolution process. The ERCB's Legal Department will advise what mechanisms are available in its mandate to accommodate this. The results of this review may be incorporated into the Directive.
- The night-time starting point should be changed from the present 2200 hours to 2100 hours.
- The wording around the isolation analysis technique should be made more explicit so that everyone can understand the rules. A subcommittee was struck to look at the wording and recommend appropriate changes.
- Informing the public of the existence of the Directive. The ERCB will consider a pamphlet describing the Noise Directive which could be either handed out or included as additional information in other relevant publications.
- A major concern dealt with expertise not only in industry but at the ERCB. The ERCB is committed to maintaining a high degree of expertise in noise control and will actively promote training and development of its head office and field staff in this area in order to enforce the Directive in a fair and credible manner. The same commitment is expected from the energy industry.
- The adjustment for tonal component was recommended to be measured on the A-weighted scale instead of the linear scale. Even though it has been used infrequently to date, industry does not want to see this adjustment disappear. The committee agreed with both these recommendations.
- The maximum wind speed value specified by the Directive of 15 kilometres per hour is seen by some as too high and having a more pronounced effect on measured sound levels than previously anticipated. The concern is with the effect a 5 to 10 kilometres per hour wind can have on sound levels if one measures upwind versus downwind. The subcommittee looking at isolation analysis techniques will also investigate some workable solution to aid in understanding this problem.

The Directive is only to be used in cases where a complaint has been filed or when new facilities are being planned. Some in industry would like to see a grandfathering clause for all pre-1988 facilities allowing them to add an adjustment for facilities built before issuance of this Directive. This is a concern because there is little protection afforded industry, should residents encroach upon an existing facility. Industry has also suggested that there be a way to identify new residential developments before subdivisions applications are approved or building permits are issued. It is felt however that this would pose a very cumbersome and slow process. As an alternative, it was suggested that a 6 dBA increase for each halving of the distance between the facility and the original closest residence be assigned. This would only be a stop gap measure until the basic question of encroachment is addressed. The ERCB has agreed to take this issue under advisement and intends to propose to committee a method to deal with it.

There is a concern that the effect of noise control should not adversely affect other environmental-related emissions. For example, the use of electric-driven motors, while quieter, increases the generation of electricity by coal which increases CO₂ emissions. It may be more appropriate for industry associations to raise this at more applicable forums.

A unanimous resolution was that the document needs clarification as opposed to simplification. The industry associations will endeavour to find an editor who will do an initial attempt on this clarification.

In addition to these specific items discussed in committee, ERCB staff are also considering several additional issues which may have to be addressed in the revised Noise Control Directive. These relate to vibration as it may need to be recognized as a negative impact on the quality of life some people enjoyed prior to living near large low-frequency sound emitting sources. Another is the need to put in place guidelines as to how extended duration sound monitoring results will be averaged to arrive at an appropriate day-time or night-time Leq value. The Directive presently has a 24-hour limit set on monitoring length requirements while some cases may warrant extending this limitation.

Conclusion

Because of the hard work and dedication of many key individuals, Alberta's citizens and energy industry have a Noise Control Directive that is a fair and equitable piece of legislation. It is designed to protect the public and industry alike using the most up-to-date knowledge in the measurement and effects of industrial noise. Further modifications to the Directive will eventually be required as experience grows or advancements in technology become known.