
Réponse – Environnement sonore – modélisation installations temporaire

Question:

Provide an updated noise model for construction so that impact can be assessed.

Réponse:

The attached response provides updated modelling results for the two primary construction stages :

- site preparation and blasting; and
- facility and marine construction.

The results contained in this response are compared to MDDEP construction criteria only. During this interim stage of ongoing construction planning, the MDDEP criteria are being used as compliance criteria.

All modelling was conducted using the methods established in the EIS. The revised noise models included noise emissions associated with the temporary construction facilities described in the response to SQ-001 in the CEEA Questions and Comments. Sources of noise have also been revised since the filing of the response to SQ-001. Table 1 lists the major sources of construction noise and the expected area of operation for both of the primary construction stages.

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Table 1 : Noise Sources, Site Preparation, Blasting, Facility and Marine Construction (as of May 2006)

Emission Type or Area	Sound Emission Sources Included	Model Type	Total Sound Power [dBA]
Blasting Equipment	hydraulic track drill, air track drill, impact hammer	point	122
Blast	Instantaneous noise, maximum of 1 per day	area	158
Silo Demolition	rockhammer/hydraulic shovel, backhoe, frontend loader, demolition shear cutter, dozer, dump truck, welder, pickup truck, jackhammer, cutting torch, utility saw	area	127
Terminal Facilities Site Preparation	haul truck, front end loader, generator, dozer, excavator, air compressor, roller/compactor	area	125
Crusher	one crusher, front end loader, haul truck, conveyor	area	128
Caisson Assembly Dock Construction	generator, excavator, air compressor, welding machine	area	113
Caisson Assembly Dock Construction	crawler crane	point	117
Traffic – site road	heavy truck	road	per US FHWA ^(a)
Traffic - highway	heavy truck, pickup truck and car	road	per US FHWA ^(a)
LNG Storage Tank Construction	air compressor, concrete vibrator, welding machine	area	105
LNG Storage Tank Construction	tower crane, RT crane	point	121
Marine Caisson Assembly	generator, excavator, air compressor, welding machine	area	113
Marine Caisson Assembly	crawler crane	point	117
Concrete Batch plant	front end loader, haul truck, conveyor	area	117
Other terminal site (SCV, gasification, fabrication, reinforce steel yard)	dump truck, generator, air compressor, excavator, bank welder	area	122
Other terminal site (SCV, gasification, fabrication, reinforce steel yard)	crawler crane, RT crane	point	122
Pile driving	crawler crane, vibratory pile driver, generator	area	118
Aggregate filling	crawler crane, generator, conveyor, front end loader	area	110
Densification	crawler crane, generator, vibratory compactor	area	119
Tug boat	daytime period only	line	116
Crew boat	daytime period and night time period	line	108
Traffic – site road	heavy truck, pickup truck and car	road	per US FHWA ^(a)
Traffic - highway	heavy truck, pickup truck and car	road	per US FHWA ^(a)

(a) sound emissions for traffic are pre-set based on North American vehicle emissions included in USA Federal Highway Administration standard methodology.

The most significant changes in the construction noise modelling at this time are :

- consideration of noise emission from silo demolition;

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- the movement of noise sources to the Transport Canada dock area;
- extension of Site Preparation and Blasting into the evening hours (planned operation of 16 hours per day, note that the silo demolition, blasts and trucking activities will still be daytime only);
- a reduction in the number of highway trucks due to the use of the existing dock facilities for delivery of materials;
- no impact pile driving expected for Facility and Marine Construction phase;
- a reduction in on-site power generation due to the use of the existing power grid;
- relocation of the concrete batch plant to a location west of the LNG storage tanks;
- tug and crew boat movement near the caisson assembly dock was added; and
- movement of the blasting noise source location to match the blast area identified in the CEAA Questions and Comments (Q-023).

The MDDEP evaluation noise levels were calculated using the « K-factors » required by the MDDEP method. The impulse noise factor (K_I) was used for the Site Preparation and Blasting phase due to the blasting activity. For the Facility and Marine Construction phase, impact pile driving is no longer expected to be used so the K_I factor is not applied to this result.

Table 2 shows the results of the prediction modelling for both of the two construction stages. The results indicate that the mitigation measures specified in the EIS are still sufficient to ensure compliance with MDDEP criteria. Based on current information, predictions for the evening for the Site Preparation and Blasting stage are just over the criteria at two locations, and will require further analysis as construction plans are finalized to ensure that criteria will be met. Changes may include limiting activity in the evening or adding mitigation measures (for example, sound barriers) as appropriate.

In general, values for the Site Preparation and Blasting phase are slightly lower than the original predictions during the day, primarily due to less highway truck traffic passing through the intersection of Highway 132 and Avenue du Port (some material will now be delivered by water). Predictions are lower for the Facility and Marine construction due to the reduction in power generation needs and a reduction in truck traffic. The predictions indicate the trucking of material will still need to be restricted to daytime hours to ensure the evening and night criteria of 45 dBA is met.

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Table 2 : Interim Construction Plan Noise Predictions, Cacouna Energy Project

Noise Reciever	Time Period	Site Preparation and Blasting $L_{Aeq,T}$ [dBA] ^(a)	Facility and Marine Construction $L_{Aeq,T}$ [dBA] ^(a)	MDDEP Construction Criteria
A-2	Day (12 hr)	33.1	36.0	55
	Evening (3 hr)	26.2	35.9	45 ^(b)
	Night (9hr)	16.7	35.9	45
A-3	Day (12 hr)	53.7	48.2	55
	Evening (3 hr)	46.1	39.1	45 ^(b)
	Night (9hr)	36.7	39.1	45
A-4	Day (12 hr)	51.7	43.9	55
	Evening (3 hr)	46.3	40.2	45 ^(b)
	Night (9hr)	36.8	40.2	45
A-5	Day (12 hr)	25.0	18.6	55
	Evening (3 hr)	21.7	17.7	45 ^(b)
	Night (9hr)	12.2	17.7	45
A-1 ^(c)	Day (12 hr)	48.8	47.0	---
	Evening (3 hr)	46.5	44.2	---
	Night (9hr)	37.0	44.2	---

(a) The L_{Aeq} values reported are for each time period identified. For example the values presented for Day are $L_{Aeq,12hr}$, Evening are $L_{Aeq,3hr}$ and Night are $L_{Aeq,9hr}$.

(b) Evening criteria may be exceeded on random occasions, but cannot be exceeded on a regular basis.

(c) Not a VEC. Presented for information purposes only.

As the construction plans are finalized, the noise follow-up program as specified in Chapter 10 of the EIS will be developed in detail. This plan will include updating the modelling to the final construction plan configuration, using the model in the mitigation planning process, and conducting a monitoring program to ensure compliance.