

Appendix 3J

Emission from Marine Vessel

Xun Xiang Recycling Barging
(Maneuvering)

Main Engine (ME) Emission

Vessel Type	Operation Mode	ME Power Rating (kW) ^[1]	ME Loading Factor ^[2]	ME SO ₂ Emission Factor (0.50% sulphur content) (g/kWh) ^[3]	ME SO ₂ Emission Factor (0.05% sulphur content) (g/kWh)	SO ₂ Effective Emission Factor (g/hr)
Tugboat	Maneuvering	2371	0.3	2.08	0.208	147.950

Auxiliary Engine (AE) Emission

Vessel Type	Operation Mode	AE Power Rating (kW) ^[4]	AE Loading Factor ^[5]	AE SO ₂ Emission Factor (0.50% sulphur content) (g/kWh) ^[3]	AE SO ₂ Emission Factor (0.05% sulphur content) (g/kWh)	SO ₂ Effective Emission Factor (g/hr)
Tugboat	Maneuvering	220	0.43	2.08	0.208	19.677

Engine Emission

Vessel Type	Speed (kn) ^[6]	Distance (km)	Time-in-mode (min)	ME Emission (g/s)	AE Emission (g/s)	Total Emission (g/s)
				SO ₂ (0.05% sulphur content)	SO ₂ (0.05% sulphur content)	SO ₂ (0.05% sulphur content)
Tugboat	5	0.350	2.27	0.0016	0.0002	0.0018

Emission Rate

Vessel Type	Operation Mode	No. of Point Source	Emission Rate (g/s)
Tugboat	Maneuvering	8	0.0002

(Hotelling)

Vessel Type	Operation Mode	AE Power Rating (kW) ^[4]	AE Loading Factor ^[5]	AE SO ₂ Emission Factor (0.50% sulphur content) (g/kWh)	AE SO ₂ Emission Factor (0.05% sulphur content) (g/kWh)	Emission Rate (g/s)
Barge	Hotelling	116	0.43	2.08	0.208	0.0029

T2 Barging Point*

(Maneuvering)

Main Engine (ME) Emission

Vessel Type	Operation Mode	ME Power Rating (kW) ^[7]	ME Loading Factor ^[2]	ME SO ₂ Emission Factor (0.50% sulphur content) (g/kWh) ^[3]	ME SO ₂ Emission Factor (0.05% sulphur content) (g/kWh)	SO ₂ Effective Emission Factor (g/hr)
Tugboat	Maneuvering	465.5	0.3	2.08	0.208	29.047

Auxiliary Engine (AE) Emission

Vessel Type	Operation Mode	AE Power Rating (kW) ^[7]	AE Loading Factor ^[5]	AE SO ₂ Emission Factor (0.50% sulphur content) (g/kWh) ^[3]	AE SO ₂ Emission Factor (0.05% sulphur content) (g/kWh)	SO ₂ Effective Emission Factor (g/hr)
Tugboat	Maneuvering	14.92	0.43	2.08	0.208	1.334

Engine Emission

Vessel Type	Speed (kn)	Distance (km)	Time-in-mode (min)	ME Emission (g/s)	AE Emission (g/s)	Total Emission (g/s)
				SO ₂ (0.05% sulphur content)	SO ₂ (0.05% sulphur content)	SO ₂ (0.05% sulphur content)
Tugboat	5	0.206	1.34	0.0002	8.2551E-06	0.0002

Emission Rate

Vessel Type	Operation Mode	No. of Point Source	Emission Rate (g/s)
Tugboat	Maneuvering	5	3.7589E-05

Note:

[1] Refer to Table 4-5 of MVEIS, HKUST 2012.

[2] Refer to Table 4-7 of MVEIS, HKUST 2012.

[3] Refer to Table 4-16 of MVEIS, HKUST 2012.

[4] Refer to Table 4-6 of MVEIS, HKUST 2012.

[5] Refer to Table 4-10 of MVEIS, HKUST 2012.

[6] According to the speed limits of vessels within Hong Kong Waters, the maximum permitted speed in the entrance to or within a typhoon shelter is 5 knots. Time was calculated by the speed limit and the distance, while daily flow was estimated based on the site survey.

[7] Refer to Appendix 3I.

*According to the reply from T2 Engineer (i.e. Appendix 3I), transfer of the fill material from land to barge is by means of a long arm backhoe and thus there is no hotelling emission from operation of T2 barge