

**GENERA RESPONSE TO THE METHYL BROMIDE DECISION MAKING COMMITTEE REQUEST WGT003**  
**24 January 2020**

<b>Item</b>	<b>Comment</b>	<b>Information requested</b>			
<i>Site plans</i>		See attached fumigation site maps for Napier, Northport and Port of Tauranga			
<i>Step by step description of the fumigation process for log piles and ships</i>	SOPs available under confidentiality				
<i>Dimension of log piles that are fumigated</i>	Derived from data across PoT, Napier and Northport (> 7,000 rows) August 2018 – December 2019.		Length (meters)	Width (meters)	Height (meters)
		Average	40.16	4.71	5.01
		Standard Deviation	14.33	1.12	1.09
		Maximum	85	11.3	6.0
<i>Volume of log piles</i>	Covered volume m <sup>3</sup> (July 2018- December 2019)	Average = 972 Maximum = 4305			
<i>Volume of logs in the log pile</i>	JAS (July 2018-December 2019)	Average = 565 Maximum = 2553			
<i>Load factor – log stacks</i>	Determined across the average volume and JAS	58%			
<i>Average dimension of logs within log piles</i>	Data set for individual logs is not available. Refer above for log pile dimensions. Average log length estimated to be slightly less than 5m				

<i>Minimum distance to adjacent log piles undergoing fumigation</i>	The logistics when using recapture technologies result in the inter-stack distances needing to be greater	2m with recapture 1.5m without recapture
<i>Ventilation release procedure for log piles - time required to remove tarpaulin</i>	This measure assumes the discrete task of removing a tarpaulin from a single average sized log stack in favorable conditions.	Estimated time to required to remove a tarpaulin is 20 minutes.
<i>Time required for ventilation to occur</i>	Dependent on a range of factors – ambient weather conditions, location, applied concentration and time between recapture and venting (not all stacks are vented immediately)	Variable
<i>Time between ventilation events</i>	Dependent on a range of conditions as above	Variable
<i>Unintended release events</i>		
<i>Dimension of the ships holds undergoing fumigation (average and maximum)</i>	Based on the grain capacity (the international standard measurement as m <sup>3</sup> ) of vessels fumigated with MB in 2019.  Refer attached typical log vessel (M.V. Berge Rishri) dimensions and stowed volumes, including load factor calculations following.	Average = 45,600m <sup>3</sup> Maximum = 51,289m <sup>3</sup>

**Hold gross capacity and JAS volume loaded per hold for a typical logger – M.V. Berge Roshiri**

Hold	Bale Capacity	Jas Loaded	Load factor
5	8375	4455	53%
4	9479	5528	58%
3	9479	5628	59%
2	9493	5500	58%
1	6050	2923	48%
<b>Total</b>	<b>42912</b>	<b>24034</b>	<b>56%</b>

**Log stack equivalent adjusting for the different load factor**

LF stack average                      58%  
 LF hold average                        56%  
 Adjust. factor                          1.036  
 Jas loaded in the Berge Rishiri    24034  
 Adjusted Jas                            24034 x 1.036 = 24899Jas

Average Jas per stack (refer above)                      565m<sup>3</sup> in a 972 m<sup>3</sup> total volume stack

Therefore a typical ship such as M.V. Berge Rishiri i.e total of all holds only (not including of top stowed cargo) is equivalent to 44 average stacks

**Hold MB use – assuming India treatment requirements**

Hold	Bale Capacity	Jas Loaded	48g/m <sup>3</sup>	72g/m <sup>3</sup>
5	8375	4455	400kg	600kg
4	9479	5528	455kg	680kg
3	9479	5628	455kg	680kg
2	9493	5500	455kg	685kg
1	6050	2923	290kg	435kg
<b>Total</b>	<b>42912</b>	<b>24034</b>		

<i>Typical dimension of the ships in which logs are fumigated in hold (average and maximum)</i>	Dimensions given as follows: <ul style="list-style-type: none"> <li>Length – Overall - maximum length of the ship parallel with the waterline.</li> <li>Moulded depth - the vertical distance from the top of the keel to the underside of the upper deck at side.</li> <li>Moulded width - the distance from the inside plating on one side of the ship to a similar point on the other measured at the broadest part of the ship.</li> </ul>		Length – Overall (meters)	Moulded Width (meters)	Moulded Depth (meters)
		Average	80	29	14.8
		Maximum	89.5	31	15.8
<i>Quantity (volume) of logs within ship hold and volume of ship hold undergoing fumigation (average and maximum)</i>	Refer Berge Nishiri data above				
<i>Ventilation release procedure for ships - time required to open ship holds</i>	The first hold is opened, MB levels are actively monitored before the next hold (and those thereafter in turn) is opened once MB levels from the previous hold are below 5ppm.	1.5 – 2 hours to open all holds (dependent on number of holds and conditions)			
<i>Time require for ventilation to occur</i>	Dependent on weather conditions, adjacent ships undergoing fumigation and other activities on the port	12 hours (completion defined when a gas free cert is issued)			
<i>Quantities of methyl bromide applied per log pile (average and maximum)</i>	Data homogenized regardless of required dose rate and seasonal variances (temperatures) to dose rates as determined by the importing country.			Methyl bromide dosed (kg)	
		Average		97	
		Standard Deviation		56	
		Maximum		517	

<p><i>Quantities of methyl bromide applied per ship (average and maximum)</i></p>	<p>As above.</p>	<p style="text-align: center;">Methyl bromide dosed (kg)</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">Average</td> <td colspan="3" style="text-align: center;">3332</td> </tr> <tr> <td>Standard Deviation</td> <td colspan="3" style="text-align: center;">567</td> </tr> <tr> <td>Maximum</td> <td colspan="3" style="text-align: center;">5139</td> </tr> </table>			Average	3332			Standard Deviation	567			Maximum	5139																																						
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<p><i>Duration of fumigation activity</i></p>	<p>As per the MPI Importing Country Phytosanitary Requirements – ICPR (schedules) available on the MPI web site.</p> <p><b>CHINA</b> Methyl bromide fumigation rates: 80g/m<sup>3</sup> for at least 16 hours at log and ambient temperatures above 15°C 120g/m<sup>3</sup> for at least 16 hours at log and ambient temperatures between 5°C to 15°C</p> <p><b>INDIA</b> Methyl-bromide at: 48 gm/cu.m at 21° or above for 24 hours 56 gm/cu.m at 16-20° C for 24 hours 64 gm/cu.m at 11-15°C for 24 hours 72 gm/cu.m at 10-11° C for 24 hours</p>	<p>The fumigation duration is determined by the Importing country phytosanitary requirements not the 'structure' in which the fumigation occurs.</p>																																																		

<p><i>Identify varying concentration of methyl bromide with duration of fumigation activity</i></p>	<p>Refer above and also Appendix A</p>	
<p><i>Fumigation procedure during varying ambient temperatures - does the applied concentration of methyl bromide vary as the temperature changes during fumigation cycle?</i></p>	<p>Refer above and also Appendix A</p>	
<p><i>Fumigation procedure during low ambient temperatures - e.g. does fumigation occur below 10 degC? Is more fumigant added?</i></p>		<p>Fumigation is not usually carried out if temperatures are, or forecast to be, below 10<sup>0</sup>C at any stage during the fumigation period.</p> <p>India does not permit fumigation at temperatures lower than 10<sup>0</sup>C – refer to the ICPR treatment schedules above</p>
<p><i>Is heating applied during fumigation?</i></p>		<p>Heating is not used during the fumigation. Due to the mass of the log stack being treated the temperature within a covered/contained log stack is relatively stable over the period of the fumigation.</p> <p>Heat is applied as the methyl bromide exists the cylinder to vaporize the methyl bromide as it passes through the delivery system.</p>
<p><i>Does ventilation occur at night?</i></p>	<p>On occasion.</p>	<p>Refer graph following</p>

<p><i>Frequency of ventilation events by time of day (average and maximum number)</i></p>	<p>Graph derived from start time of ventilation for all row/vessel ventilations during 2019 for Northport and PoT.</p>	<p>See attached graph below</p>
<p><i>Spread of ventilation events by time of day (average and minimum)</i></p>		<p>See attached graph below</p>
<p><i>Number of concurrent (and sequential) ventilation events that can occur (average and maximum)</i></p>	<p>Estimated</p>	<p>Concurrent max venting's = 2  Sequential average ventings = 8-10 venting's  Sequential max ventings = 25 venting's</p>

Frequency and Distribution of venting start times at PoT and Northport during 2019

