TIER 1: INDIVIDUAL SOURCE CATEGORY CHECKLIST Ver 1.0

Inventory Checked: 2004

Source Category: 4A Enteric fermentation-CH4 CH4

Estimates prepared by: Ministry of Agriculture and Forestry with data from Statistics New Zealand and Agresearch

Working spreadsheet(s)

Tier 1 QC Activity & Procedures						
QC Activity	**Procedures**	**Procedures adopted for 2006 NIR (2004 data)**	**Organisation/Person responsible for quality check**	**Brief description of check applied (include date/person & reference if required)**	**Results of check (include reference if required)**	**Corrective Actions Taken**
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	Check descriptions of activity data and emission factors and ensure that these are properly recorded and archived.	Check activity data and emission factors are described in the NIR report and any changes from previous years are adequately documented.	MfE-SP	S. Petrie : Checked description of activity data, emission factors and methodology in NIR	Well documented in chapter 6 and Annex 3a of the NIR	none
Check for transcription errors in data input and reference	Confirm that bibliographical data references are properly cited in the internal documentation.	1. Undertake visual checks of module names for consistency in NIR worksheets. 2. Check all references cited in the appropriate source sector chapter in the NIR report and make sure they are corrctly referenced at the end of the chapter.	MfE-TW	TW 5/4/06: 1. Checked module names in worksheets for consistency. 2. Check references cited in text are correctly referenced in the reference chapter.	1. 1990 module names incorrectly labelled as 2004 in worksheets; 1 submodule wrongly named. Need to streamline module names 2. Some references cited in text missing in reference chapter and several references no longer cited in main text	corrected to 1990; submodule name amended; module names updated
	Cross-check a sample of input data from each source category (either measurements or parameters used in calculations) for transcription errors.	1. Cross check activity data from NIR worksheets with that in the CRF for transcription errors.	MfE-TW	TW 5/4/06: 1. visual check by comparing animal numbers for all classes for 1990 used in enteric fermentation figures from NIR worksheet with that in the CRF reporter	1. All livestock numbers in NIR worksheets are the same as those in the CRF reporter.	none
Check that emissions are calculated correctly.	Reproduce a representative sample of emissions calculations.	Using the figures in the NIR worksheets, calculate representative sample of emissions manually and compare to emissions value in CRF.	MfE-TW	TW 5/4/06: 1. Calculated dairy cattle CH4 enteric fermentation emissions using figures from worksheet 4.1 (1990) 2. calculate methane emissions using activity data-1990	1.Value calculated was 240.08Gg (NIR) compared with 240 Gg (CRF). Test passed. 2. Final emissions of methane: Value in NIR worksheet for 1990 is 1025.27Gg compared with 1026.38Gg in the CRF reporter. Within 1% -test passed.	none
	Selectively mimic complex model calculations with abbreviated calculations to judge relative accuracy.	Use Tier 1 approach to calculate a sub source of data (eg CH4 emissions from dairy cattle) to judge relative accuracy.	MfE	limited time meant this check was not undertaken		
Check that parameter and emission units are correctly recorded and that appropriate conversion factors are used	Check that units are properly labelled in calculation sheets	Check the units are correctly labelled in the NIR worksheets	MfE-TW	TW 5/4/06: visual inspection of units labeled in agricultural worksheets	units correctly labelled	none
	Check that units are correctly carried through from beginning to end of calculations.	check appropriate units are used throughout calculations	MfE-TW	TW 5/4/06:checked units are appropriate	correct SI units are used in tables	none
	Check that conversion factors are correct	Check that the correct conversion factors have been used to calculate the emissions in the NIR worksheets-particularly conversion from tonnes to Gg and from C to CH4.	MfE-TW	TW 5/4/06: checked conversion from kg (as kg/head/yr) to Gg of CH4 for enteric fermentation and manure management occurred in NIR worksheet 4.1	conversion factors are correct and accounted for properly	none
Check the integrity of database and/or spreadsheet files.	Confirm that the appropriate data processing steps are correctly represented in the database.	confirm data processing steps within model for enteric fermentation are appropriate	MfE			
	Ensure that data fields are properly labelled and have the correct design specifications.	Ensure the addition or deletion of datalines are adequately explained	MfE-TW	TW 5/4/06: check worksheet tables for obvious gaps in the data-series	none found	none
	Ensure that adequate documentation of database and model structure and operation are archived.	Ensure there is adequate documentation of the model structure and that it is archived.	MfE	S. Petrie 13/04/05: check adequate documentation of enteric fermentation model	paper written by Clark et al (2003) describing the model is archived on the Mfe computer network and copies are also held at MAF	none
Check for consistency in data between source categories	Identify parameters (e.g. activity data, constants) that are common to multiple source categories and confirm that there is consistency in the values used for these parameters in the emissions calculations.	Check for consistency in animal number dataset.	MfE-TW	TW 6/4/06: Checked for consistency in animal numbers within CRF for dairy cattle and sheep in 1990 and 2004 (for enteric fermentation and manure management)	Dairy numbers consistent for dairy cattle in 1990 (3390.87) and 2004 (5118.8) and sheep in 1990 (57860.83) and 2004 (39572.43) across manure management and enteric fermentation	none
Check that the movement of inventory data among processing steps is correct.	Check that emissions data are correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries.	1. Manually sum CH4 emissions from dairy cattle & non dairy cattle sources for enteric fermentation & compare with values in cattle node in CRF reporter.	MfE-TW	TW 5/4/06: 1. sum CH4 emissions from dairy cattle and non-dairy cattle and compare with total in CRF reporter	1. The summed value is 481.81 Gg from dairy and non-dairy cattle in 1990 compared with 474.62 Gg (total for cattle in CRF). Minor difference due to rounding.	none

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Estimates prepared by:	Ministry of Agriculture and Forestry with data from Statistics New Zealand and Agresearch					
Working spreadsheet(s)						
	Check that emissions data are correctly transcribed between different intermediate products	QA/QC procedures used that show correct transcription between intermediate worksheets and final entry of data into CRF reporter	MfE	on-going and done informally by double checking all entries in model input sheets, output sheets and CRF excel sheetss		none
Check that uncertainties in emissions and removals are estimated or calculated correctly.	Check that qualifications of individuals providing expert judgement for uncertainty estimates are appropriate.					
	Check that qualifications, assumptions and expert judgements are recorded. Check that calculated uncertainties are complete and calculated correctly.	Check appropriate qualifications, assumptions and judgements for uncertainity analysis are recorded & archived. Check calculated uncertainties are completed and correct				
	If necessary, duplicate error calculations or a small sample of the probability distributions used by Monte Carlo analyses.					
Undertake review of internal documentation.	Check that there is detailed internal documentation to support the estimates and enable duplication of the emission and uncertainty estimates.	Review internal documentation-ensure there is adequate documentation to support the estimates and uncertainty analysis.	MfE-SP			
	Check that inventory data, supporting data, and inventory records are archived and stored to facilitate detailed review.	Check to ensure copies of reports of sector reviews and methodologies are archived.	MfE-SP	S.Petrie: Ensure spreadsheets and information on the enteric fermentation model are stored in an accessible and secure location	All data and methodologies associated with estimating enteric fermentation (and all agricultural emissions) are stored on the Mfe Silent One documentation system which is regularly backed up.	none
	Check integrity of any data archiving arrangements of outside organisations involved in inventory preparation.	N/A-data compliation done in house	MfE	N/A	N/A	
Check methodological and data changes resulting in recalculations.	Check for temporal consistency in time series input data for each source category.	record result from time series consistency check in CRF reporter software	MfE-SP	informal check by looking at all graphs	no inconsistencies in time-series notes	none
	Check for consistency in the algorithm/method used for calculations throughout the time series.	Confirm the method used for estimating CH4 from enteric fermentation is consistent throughout the time series	MfE-SP	S. Petrie : confirm consistent methodology	Methodology is consistent-reading model description and training on how the model runs confirms this	none
Undertake completeness checks.	Confirm that estimates are reported for all source categories and for all years from the appropriate base year to the period of the current inventory.	record result of completeness check in CRF reporter software	MfE-SP	S.Petrie : run completeness checks.	all passed	none
	Check that known data gaps that result in incomplete source category emissions estimates are documented.	ensure any known data gaps are documented	MfE-SP	N/A	N/A	N/A
Compare estimates to previous estimates.	For each source category, current inventory estimates should be compared to previous estimates. If there are significant changes or departures from expected trends, recheck estimates and explain any difference.	Check 1990 and 2003 value in CRF Reporter - If figures in black is consistent with previous estimates; if in blue explain differences	MfE-TW	TW 5/4/06: Check for inconsistencies with previous estimates for 1990 and 2003	Figures for 1990 and 2003 are different. These differences are due to updates in stock population numbers	none