

DairyNZ SmartSAMM

Mastitis Investigation Kit

Herd:

Advisor:

Date:



DairyNZ

Benchmarks and supporting documentation

Industry resources have been used to provide benchmarks and warning levels for this Kit. For more information on individual benchmarks, see:

- SmartSAMM Industry Benchmarks at smartsamm.co.nz/farmers/industry-benchmarks
- SmartSAMM Mastitis Focus Report at smartsamm.co.nz/tools/mastitis-focus
- SmartSAMM Guidelines and Technotes at smartsamm.co.nz/resources/guidelines and smartsamm.co.nz/resources/technotes

The Mastitis Investigation Kit enables a trained advisor to collect sufficient data to identify key areas for improvement in mastitis and milk quality management. Supporting documentation (SmartSAMM Technotes and Guidelines, referenced where applicable) is available from smartsamm.co.nz

ACVM registered products

All veterinary medicines and agricultural chemicals with current Animal Compounds and Veterinary Medicines (ACVM) registration can be accessed from the Ministry of Primary Industries website, at: <https://eatsafe.nzfsa.govt.nz/web/public/acvm-register>

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Disclaimer

DairyNZ Limited (“DairyNZ”, “we”, “our”) endeavours to ensure that the information in this publication is accurate and current. However we do not accept liability for any error or omission.

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Mastitis Investigation Kit

Read SmartSAMM Technote 13 pages 5-15 for a guide to using these sheets and tips for efficient data collection

Section	Page	Tick if required	Advisor <i>Name of advisor who will undertake this part</i>	Date <i>Date when this will/did occur</i>
Investigation master sheet	A1-A8	✓		
Farm profile	B1-B7	✓		
Milk cultures	C			
Individual cow cell counts	D			
Milking machine dry test	E			
Milking machine performance tests	F			
Milking routine	G			
Clinical case management	H			
Teat condition	I			
Milking observations	J			
Completeness of milking	K			
Teat disinfection	L			
Environment	M			

How to use this kit

The SmartSAMM Mastitis Investigation Kit is designed to capture information about a specific herd, during the course of an investigation, undertaken by a trained advisor.

[Section A and B](#) helps an advisor identify and prioritise major risk factors that may be contributing to a mastitis problem.

[Section C to M](#) provides forms to capture the detailed findings.

A new Kit is required for each herd and is best completed by hand. Usually sections A and B will always be completed.

Completion of the remaining sections will depend on the specific herd circumstances. On-line resources are available to aid calculations. Check the SmartSAMM website for links and new resources as they become available.

Printing

The Kit can be printed using a standard laser printer in the following formats:

- Colour or Black and White
- On A3 paper, double-sided, stapled in "booklet" format
- On A4 paper, double-sided, stapled top left or down left side

Abbreviations

The following abbreviations have been used in the Kit:

BMSCC = bulk milk SCC

DCT = Dry Cow Treatment

DCV = Society of Dairy Cattle Veterinarians of the NZVA

ICSCC = Individual cow SCC

ITS = Internal Teat Sealant

kPa = kilo Pascals

MPTA = New Zealand Milking and Pumping Trade Association

MRS T = Mark, Record, Separate and Treat

SCC = somatic cell count

TN = SmartSAMM Technote

A1. Investigation master sheet

Date

Presenting problem

.....

Re-defined problem

.....

Agreed key factors to resolve the problem

(Use A8 to identify and allocate priorities)

1

 2

 3

 4

Advisory team

Name
 Company
 Phone
 Fax
 Email

Name
 Company
 Phone
 Fax
 Email

Name
 Company
 Phone
 Fax
 Email

Client goals for milk quality:

Bulk Milk SCC:

 Clinical mastitis:

 Culling for mastitis:

Review Date

A2. Investigation master sheet

Does the farm operation match the SmartSAMM Guidelines?

How important is this to the problem?

B. Farm profile	TN	Bench-mark	Yes	Unsure	No	Comments
Number of BMSCC consignments above dairy company grading level (e.g. 400,000 cells/ml) meets current guidelines: <ul style="list-style-type: none"> For past month: For season to date: 	11,13	<1				
The policy used to check introduced (purchased or leased) cows for mastitis meets the guidelines	21					
Udder conditions at calving (no excessive oedema) meets the guidelines	1, 2					
Permanent and detailed records are kept on cows with clinical mastitis	4, 10					
Total number of clinical cases in all cows meets current guidelines See Industry benchmarks	4, 10	<15% of all cows				
Number of clinical cases in first calving heifers meets current guidelines See Your calving system on Mastitis Focus Report.	1, 2	<16% of heifers				
The culling policy for clinical and persistently infected cows meets the guidelines	15	1-2% of all cows				
Management at drying off and dry cow treatment strategy meets the guidelines	14					
Other						

4 - High and urgent
3 - High but not urgent
2 - Low
1 - Different problem

C. Milk cultures	TN	Bench-mark	Yes	Unsure	No	Comments
Milk samples were collected from cows representative of the problem being investigated	4					
There are sufficient milk culture results to assess the herd problem	13					
Bacteria have been identified that could account for the herd problem	1, 5					
Other e.g. has antibiotic resistance been detected?						

A3. Investigation master sheet

Does the farm operation match the SmartSAMM Guidelines?

How important
is this to the
problem?

D. Cow somatic cell count analysis	TN	Bench- mark	Yes	Unsure	No	Comments
Incidence of new infections for all cows meets current guidelines i.e. <10 new high SCC cows per 100 cows in herd per month See Spread of Infection on Mastitis Focus Report.	5, 12	<10				
Incidence of new infections for first calvers meets current guidelines i.e. <30% of first calving heifers developed high SCC in past 12 months. See Spread of Infection on Mastitis Focus Report.	2, 5, 12	<30%				
Other						

4 - High and urgent
3 - High but not urgent
2 - Low
1 - Different problem

E. Milking machine dry test	TN	Bench- mark	Yes	Unsure	No	Comments
The last test was recent enough to provide valid information on the current problem	25					
The vacuum and airflows are within the current guidelines (i.e. working vacuum, effective reserve, regulation efficiency)	25	MPTA specs				
Pulsators operate within the current guidelines	25	MPTA specs				
Liners and shells are compatible. Liner, claw tubes and other rubberware are in good condition	6	MPTA specs				
Other						

A4. Investigation master sheet

Does the farm operation match the SmartSAMM Guidelines?

How important
is this to the
problem?

F. Milking machine performance test	TN	Bench- mark	Yes	Unsure	No	Comments
Compatible cluster components have been selected and liners seem OK for average teat size.	25					
Clusters hang squarely on udders						
Vacuum levels and differences meet current standards and guidelines	25	MPTA specs				
Mean claw vacuum meets the current guidelines	25					
Vacuum stability in milkline and receiver meets the current guidelines	25	MPTA specs				
Other						

4 - High and urgent
3 - High but not urgent
2 - Low
1 - Different problem

G. Milking routines	TN	Bench- mark	Yes	Unsure	No	Comments
Cow flow into and away from farm dairy is acceptable						
Cups go on clean, dry teats	5					
Cows have let-down soon after the cups go on	5					
Hygiene at milking time (wearing of gloves, stripping methods etc) is helping to reduce numbers of bacteria at teat ends	5, 8					
The technique used by all staff to remove cups is appropriate	5					
The frequency of teat cup slips is within current guidelines	8	<10% of cows				
Other						

A5. Investigation master sheet

Does the farm operation match the SmartSAMM Guidelines?

How important
is this to the
problem?

H. Clinical case management	TN	Bench- mark	Yes	Unsure	No	Comments
The protocol for finding clinical cases is appropriate	4 10					
All staff use the same protocol for finding clinical cases	4 10					
The protocol for treating clinical cases is appropriate	4 10					
Implementation of MRS T is acceptable for: <ul style="list-style-type: none"> • Marking • Recording • Separating • Treating 	4					
Other						

4 - High and urgent
3 - High but not urgent
2 - Low
1 - Different problem

I. Teat condition	TN	Bench- mark	Yes	Unsure	No	Comments
Long term changes in teat skin condition and teat end hyperkeratosis meet current guidelines See Technote 9 pg 22 for guideline table.	9	<4% qtrs or 10% COWS				
Short term changes in teat condition (colour, swelling, firmness, openness) meet current guidelines.	9	<8% qtrs or 20% COWS				
Other						

A6. Investigation master sheet

Does the farm operation match the SmartSAMM Guidelines?

How important
is this to the
problem?

J. Milking observations	TN	Bench- mark	Yes	Unsure	No	Comments
Hygiene of udders and legs is acceptable (fewer than 20% of cows with hygiene score 3 or 4)	26					
Cow discomfort is minimal (fewer than 10% of cows with KiSt response) during milking	5	<10%				
Delayed let-down in the herd is minimal (less than 10% of cows have a delay of more than 1 minutes)		1 min				
The average milk flow time of the herd meets current guidelines for their production level See Technote 5, pg 16 for guideline table	5					
Average over-milking time is acceptable <ul style="list-style-type: none"> Minimal: <1 minute, Moderate: 1-3 minutes, Excessive: >3 minutes 	5	3 min				
Teat disinfectant adequately covers all teat surfaces (use = 20ml per cow per milking)	7	20ml				
Other						

4 - High and urgent
3 - High but not urgent
2 - Low
1 - Different problem

K. Completeness of milking	TN	Bench- mark	Yes	Unsure	No	Comments
Fewer than 20% of quarters contain strip yields of 100 ml or more	6	< 20% of qtrs				
Other						

A7. Investigation master sheet

Does the farm operation match the Farm Guidelines?

How important
is this to the
problem?

L. Teat spray preparation	TN	Bench- mark	Yes	Unsure	No	Comments
The product is listed on the ACVM register. See register on MPI website.	7					
Mixing rates, water quality and state of storage and mixing containers meet current guidelines	7					
Concentration of disinfectant and emollient are at appropriate levels for the conditions (teat condition, bacterial challenge etc)	7					
Other						

4 - High and urgent
3 - High but not urgent
2 - Low
1 - Different problem

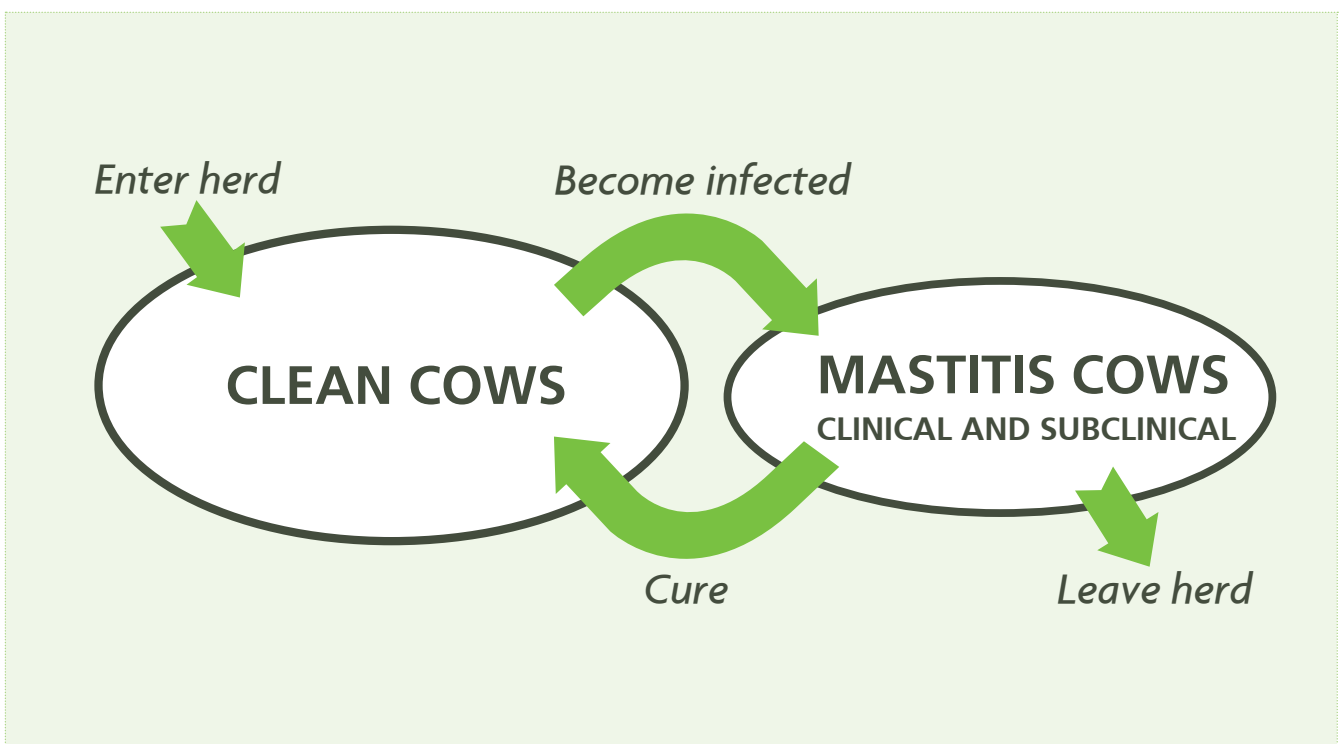
M. The environment	TN	Bench- mark	Yes	Unsure	No	Comments
Dry cows are managed so as to minimise dirt on udders and legs in early and late dry period	26					
Cows calve in a clean and dry environment	1					
Udders remain clean and dry in the first hour after milking	7					
Lactating cows are managed so as to minimise dirt on udders and legs in early lactation	26					
Other						

A8. Investigation master sheet

Herd mastitis dynamics chart: See technote 13, page 7

Major pathogen(s):

Key control points:



Other key issues:

B1. Farm profile

Client details		Farm information	
Contact person		Herd manager	
Phone		Herd size	
Role on farm		Number of milking staff	
		Supply number:	
Postal address			
Clients description of the problem			
Off-pasture Structures (Circle & add details where applicable)	Stand-off pad Feed pad Covered yards Herd home® Cubicle barn Other		
Dairy type	Herringbone - swing over Herringbone - double up	Rotary Other	No. of bails:
Plant type	Single brand - if so what brand?	Mixed brand - if so what brands?	

Available information		
Dairy company supplied:		
The farm's regular:	Name:	Contact number:
<ul style="list-style-type: none"> • Milk quality advisor • Veterinarian • Milking machine technician • Herd testing organisation • Farm consultant(s) 	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____

B2. Farm profile

Clinical case records		tick when copy received <input type="checkbox"/>	
Are they:	Kept temporarily Stored on paper Stored on PC Uploaded to herd test organisation	How far back do they go?	

BMSCC		tick when copy received <input type="checkbox"/>	
Third party access granted?	<input type="checkbox"/> YES <input type="checkbox"/> NO		
Available for:	From: <input type="checkbox"/> Dairy company <input type="checkbox"/> Tanker docketts <input type="checkbox"/> Other		
<input type="checkbox"/> This lactation <input type="checkbox"/> Last lactation			
Has farm graded this lactation?	<input type="checkbox"/> YES <input type="checkbox"/> NO		
Is demerit relief available?	<input type="checkbox"/> YES <input type="checkbox"/> NO		

ICSCC		tick when copy received <input type="checkbox"/>	
Third party access granted?	<input type="checkbox"/> YES <input type="checkbox"/> NO		
Available electronically	From herd testing org <input type="checkbox"/> From farm computer <input type="checkbox"/>		
Herd testing org			
Date of last herd test			
No. of tests per year			
Mastitis Focus report available?	<input type="checkbox"/> YES <input type="checkbox"/> NO		

Milk cultures		tick when copy received <input type="checkbox"/>	
Number of samples			
Collected when			
Collected by			

NZMPTA		tick when copy received <input type="checkbox"/>	
Date of last machine test			
Testing technician			
Testing company			

Calving pattern - include the starting month and number of cows calving			
Seasonal	Start month		No of cows
Split	Start month		No of cows
	Start month		No of cows
Other	Start month		No of cows

B3. Farm profile

Discuss the problem - What is the primary concern and when does it occur

--

People

Are farm staff employed? (incl. relievers)	
If yes, how many staff?	
How many operators are in the dairy at each milking?	
When are relief milkers used?	
Is the herd ever milked once a day? If YES, when:	

Cows	How many first calvers in the herd? (Approximately)	How many mature cows in the herd? (Approximately)
This lactation		
Last lactation		

Have any cows in the milking herd been introduced from external sources in the past 3 years?

If YES, please describe

Date	Source	No. maiden heifers	No. of cows	Total

Define the problem - tick appropriate boxes (one or more)

- | | |
|--|---|
| <input type="checkbox"/> BMSCC | <input type="checkbox"/> At calving |
| | <input type="checkbox"/> During lactation |
| <input type="checkbox"/> Clinical cases | <input type="checkbox"/> At calving |
| | <input type="checkbox"/> During lactation |
| | <input type="checkbox"/> Other |
| <input type="checkbox"/> High ICSCC cows | |
| <input type="checkbox"/> Teat condition | |
| <input type="checkbox"/> Other (eg thermomodurics) | |

Note any features about staffing issues and milking routine consistency that may impact on mastitis.

Is the age structure or replacement rate of the herd likely to impact on the level of mastitis in the herd and the management options?

What is the risk of introducing mastitis bacteria from other herds into the herd?

What purchasing protocols are used to safeguard against mastitis?

B4. Farm profile

Milking mob management	
Are milking cows milked in separate herds on a regular basis? (Other than during colostrum withholding or vet treatment withholding periods).	<input type="checkbox"/> YES <input type="checkbox"/> NO
If yes, on what basis are cows split?	If "Previous SCC/mastitis history" is used, are the "clean" cows milked first?
<input type="checkbox"/> Age	<input type="checkbox"/> Always
<input type="checkbox"/> Body Condition Score	<input type="checkbox"/> Most of the time
<input type="checkbox"/> Previous SCC/mastitis history - please describe below:	<input type="checkbox"/> Sometimes
<input type="checkbox"/> Other - please describe below:	<input type="checkbox"/> Never
More detail:	

Milking infrastructure	
Have there been any recent changes to the dairy? If YES, describe these changes.	
What type of liners are in the shells?	
When were they last changed?	
When are they due for changing next?	
Max. recommended milkings	<input type="checkbox"/> 2500 <input type="checkbox"/> 5000

Udders at calving	Cows	First calving heifers
Were animals affected by udder oedema at the last calving?	<input type="checkbox"/> Many (>10%) <input type="checkbox"/> Some (<10%) <input type="checkbox"/> None	<input type="checkbox"/> Many (>50%) <input type="checkbox"/> Some (<50%) <input type="checkbox"/> None
Were animals affected by tight udders that were dripping milk at the last calving?	<input type="checkbox"/> Many (>5%) <input type="checkbox"/> Some (<5%) <input type="checkbox"/> None	<input type="checkbox"/> Many (>5%) <input type="checkbox"/> Some (<5%) <input type="checkbox"/> None

Check for any obvious leads relating to the dairy plant and equipment that should be followed up.

Estimate how many cow-milkings occur per month?
.....

Estimate how many months between liner changes:
.....

For ease of calculation, see the SmartSAMM Liner Ready Reckoner, at smartsamm.co.nz.

Tight, swollen, dripping udders at calving are at risk of new infection. Consider when choosing dry cow strategy and pre-calving management of first calvers.

B5. Farm profile

Clinical cases	
Do the clinical records show: (circle relevant records)	Cow ID Date Quarter treated Product used Result/outcome Date clear back in vat
How are these recorded? <input type="checkbox"/> Whiteboard/blackboard <input type="checkbox"/> Paper (e.g. Farm Diary) <input type="checkbox"/> Milking software/local PC <input type="checkbox"/> Herd improvement software <input type="checkbox"/> Other _____	Estimate % of cases currently recorded as planned: _____ _____ _____ _____ _____
How many clinical cases recorded for this season/year?cases per.....cows =.....%
How many cases were in heifers?cases per.....heifers =.....%
How many cases required a second course of treatment (within 1 month)?cases per.....total cases =.....%
How many cases occurred within 14 days of calving? In heifers In cows See Your calving system on Mastitis Focus Report.cases per.....heifers =.....%cases per.....cows =.....%

A high number of cases in heifers at, or soon after calving, are indicative of environmental mastitis

A high number of cases in lactation are more indicative of contagious mastitis.

Warning Levels:

From Industry benchmarks:

>15 clinical cases per 100 cows calved in season

>20% of clinical cases receive 2 or more courses of treatment

From Mastitis Focus Report:

> 8 clinical cases per 100 cows (all) calved, within the first 14 days of calving

> 16 clinical cases per 100 heifers calved, within first 14 days of calving.

> 1 clinical case per 100 cows milked per month of lactation

Culling	
How many cows were culled mainly for mastitis/high SCC?cows per.....cows =.....%
How many cows died due to mastitis?cows per.....cows =.....%

Compare culling rate with warning levels:

From Industry benchmarks:

> 1-2% cows culled or died due to mastitis per total cows in herd, per year

Drying-off management	
On average, how many litres were cows producing at the time of drying-off?	
Are any steps taken to reduce level of production?	<input type="checkbox"/> YES <input type="checkbox"/> NO
If YES, what approach(es) were used?	Details:
<input type="checkbox"/> Change in milking frequency <input type="checkbox"/> Reduced feeding level <input type="checkbox"/> Other	

Were the majority of cows in the herd likely to be producing between 5 and 10L at drying-off?

below 5L

5 - 10L

> 10L

Check the method used to dry off cows was consistent with SmartSAMM Guideline 16.

B6. Farm profile

Dry cow strategy at end of last lactation	
How many cows received Antibiotic DCT?	Total no. of cows..... as % of herd.....%
How many cows received Internal Teat Sealant (ITS)?	Total no. of cows..... as % of herd.....%
How many cows received a combination (Antibiotic DCT + ITS)?	Total no. of cows..... as % of herd.....%

Drying-off management	
Did drying off occur on more than 1 day?	<input type="checkbox"/> YES <input type="checkbox"/> NO
If Yes, how many cows were dried off in each batch, approximately?	Batch 1.....Batch 2..... Batch 3.....Batch 4.....
How many people were involved in doing the treatments at each batch?	
How were the teats cleaned before treatment?	
Were teats sprayed after treatment?	<input type="checkbox"/> YES <input type="checkbox"/> NO

Dry cow management	
Do the DCT records show: (Circle relevant records)	Cow ID Treatment date Product(s)
How were cows managed after dry off?	
How were cows checked for mastitis after dry off?	
Were there any cases of clinical mastitis after dry off?	<input type="checkbox"/> YES <input type="checkbox"/> NO

Good dry cow records are essential for managing risk of inhibiting substance grades at calving

Clinical cases after drying-off reflect the overall drying-off management from preparing the cows, techniques used to administer antibiotic, to hygiene post drying-off

B7. Farm profile

Heifer management	
Are the first calving heifers treated differently to cows pre-calving?	<input type="checkbox"/> YES <input type="checkbox"/> NO
If YES, what steps are taken to reduce mastitis in first calving heifers before/at calving?	<input type="checkbox"/> Internal teat sealant <input type="checkbox"/> Twice daily calf pickup <input type="checkbox"/> Teat disinfection prior to calving <input type="checkbox"/> Change in feed type/level e.g. hay feeding <input type="checkbox"/> Other
Details:	

If an inspection of the feed pad or calving pad could be beneficial, schedule it in your diary for the appropriate time of year

To what extent are these areas likely to be contributing to an environmental mastitis problem?

- Low
 Med
 High

Environment	
Are there areas around the farm that are likely to make udders and legs dirty:	
... before calving? <input type="checkbox"/> YES <input type="checkbox"/> NOin lactation? <input type="checkbox"/> YES <input type="checkbox"/> NO
If YES, what are significant problem area(s)?	If YES, what are significant problem area(s)?
<input type="checkbox"/> Laneways, gateways <input type="checkbox"/> Grazing paddocks, crops <input type="checkbox"/> Entry/exit from yards <input type="checkbox"/> Feed pad or stand-off pad <input type="checkbox"/> Housing structures <input type="checkbox"/> Other	<input type="checkbox"/> Laneways, gateways <input type="checkbox"/> Grazing paddocks, crops <input type="checkbox"/> Entry/exit from yards <input type="checkbox"/> Feed pad or stand-off pad <input type="checkbox"/> Housing structures <input type="checkbox"/> Other
Are steps taken to reduce dirt/hair on tails?	<input type="checkbox"/> YES
	Describe:
Are steps taken to reduce hair on udders?	<input type="checkbox"/> YES
	Describe:

C. Milk culture (Technote 4)

	Cow ID	Age	Calving Date	Sample		Comments / Sampling reason	ICSCC		Results
				Date	Quarter		Last count	n SCC exceeded 120,150	
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

The batch of samples	
Who took the samples?	
Date submitted for culture:	
Lab submitted to:	
The samples are:	Fresh <input type="checkbox"/> Frozen <input type="checkbox"/>
Sampling reason? (if mixed, then mark reason for individual cows in column)	High cell count Clinical cases Other
Who selected the COWS?	
Sample type? (Identify quarter in column)	Clinicals - individ. quarter Subclinicals - individ quarters Cow composite samples

Results	
Number of samples	
<i>Staph. aureus</i>	<i>C. bovis</i>
<i>Strep. uberis</i>	CNS
<i>Strep. ag</i>	Other
<i>Strep. dyst</i>	Mixed
<i>E. coli</i>	Contaminated
Number of samples with no growth	
Number with interpretable results	

D. Individual cow cell counts (Technote 12, 23)

Attach copy of SmartSAMM Mastitis Focus report here.

Compare herd information with Mastitis Focus	
Circle data available for Mastitis Focus:	<p>Calving dates</p> <p>Clinical case records</p> <p>Herd test records</p> <p>Termination dates</p> <p>Birth dates</p> <p>DCT records</p>
See New infection Rate box New infection rate (subclinical & clinical) is	<input type="checkbox"/> Below trigger <input type="checkbox"/> Above trigger
See Spread of infection box: Average new infection rate (all cows) is: First calver new infection rate is:	<p><input type="checkbox"/> Below trigger <input type="checkbox"/> Above trigger</p> <p><input type="checkbox"/> Below trigger <input type="checkbox"/> Above trigger</p>

Complete tables below if SmartSAMM Mastitis Focus is not available.

Compare mastitis prevalence in different groups of cows			
Group	No. cows with high SCC (>150)	Total no. cows in group	Percent above threshold
1st lactation heifers			
Mature cows			

Is any particular group of cows affected?
(eg different ages, stages of lactation or management groups)

Estimate spread of infection in first calving heifers						
SCC Ranges (000/ml)	Date/year		Date/year		Date/year	
	No.	%	No.	%	No.	%
0-149						
150-249						
250-499						
500+						
Total cows						

Review summary reports provided by herd test provider. The percent of heifers that have had a cell count above 150,000 cells/ml is an indicator of spread of infection in the herd.

Suspect a problem if the percentage increases by more than 10% per calendar month (interpret with care when there are less than 40 heifers tested).

Check proportion of first calving heifers in lowest SCC range.	
Does this remain above 80% for whole lactation?	<input type="checkbox"/> YES <input type="checkbox"/> NO

Suspect a problem if more than 20% of heifers have a high cell count by the end of their first lactation.

E. Milking machine dry test (MPTA test or equivalent dry test)



Attach copy of dry test here

F. Milking machine performance test

Clusters:			
Attachment:	Rotary – Rear H'bone – Rear H'bone – Side Other	Liner make	
Cluster position in relation to the cows' udders	Good Fair Poor	Model no.	
Shell dimensions	Length:	Liner length unstretched	
	Outer Diameter: Hole: Internal Diameter:	Liner stretch (%) or tension (N)	

Do clusters hang squarely on nearly all udders?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
--	------------------------------	-----------------------------

If no, do clusters appear to be:

Twisted, due to:

- Long milk tube positioning relative to udders
- Long milk tubes and pulse tubes are twisted

Pulling or dragging on the udder

- Long milk tubes are too long or too short
- Stainless steel droppers are too long
- Lack of easy adjustment for udders of different heights
- Incorrect positioning of milking inlets or Automatic Cup Removers

Estimated teat size and shape (based on visual assessment only)

Teat size in this herd is:	In length, the teats tend to be:	In width, the teats tend to be:
Very consistent <input type="checkbox"/>	Short (<30 mm) <input type="checkbox"/>	Narrow (<20 mm) <input type="checkbox"/>
Very variable <input type="checkbox"/>	Average (30-70 mm) <input type="checkbox"/>	Average (20-23 mm) <input type="checkbox"/>
	Long (>70 mm) <input type="checkbox"/>	Wide (>23 mm) <input type="checkbox"/>
		Cone or funnel-shaped <input type="checkbox"/>

Liner compatibility

In your opinion as the adviser:

Are liners compatible with the shells?	<input type="checkbox"/> YES <input type="checkbox"/> NO	Are liners compatible with teats?	<input type="checkbox"/> YES <input type="checkbox"/> NO
--	--	-----------------------------------	--

F. Milking machine performance test *cont*

Claw vacuum: During milking, at 2-3 minutes after cups on	
Unit	Average claw vacuum (kPa) at 2-3 minutes
1	
2	
3	
4	
5	
6	
7	
8	
Mean	
Pass/Fail guideline Mean claw vacuum within range 36-42 kPa at 2-3 minutes after cups on, or at 5 L/min with flow simulator.	
In your opinion as the advisor:	
Is claw vacuum acceptable?	<input type="checkbox"/> YES <input type="checkbox"/> NO
If no, is it contributing to:	<input type="checkbox"/> teat damage <input type="checkbox"/> slow milk flow
Are claw bowls emptying normally? <i>If no, check for blocked air admission holes.</i>	<input type="checkbox"/> YES <input type="checkbox"/> NO

Vacuum level: Not during milking			
	Measure:	Guidelines:	
Working vacuum (kPa) at ctp (central test point)		Milkline height (m)	Vacuum (kPa)
Milkline height (m) above cow's feet		1.8	48
Pass/Fail:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	1.6	46 – 48
		1.4	44 – 46
		1.2	42 – 44
		Lowline	40 – 42
Vacuum stability in milkline: During milking			
		Guidelines:	Pass/Fail
Milking vacuum when all units connected (kPa)	Max. Min.	Vacuum gauge reading should stay within +/- 2 kPa during milking	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
Vacuum during cluster change over (kPa)	Min.	Vacuum drop can be up to 5-10kPa. Recovery time is more important.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
Time to recover after changeover, to milking vacuum range (secs)		Should take less than 3 seconds to recover to normal range.*	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

*If outside these guidelines, or regulator is regularly observed "hunting" i.e. overshooting or undershooting, contact a registered milking machine tester for a full milking machine test

G. Milking routines, teat cup slips (Technote 5, 6)

<p>Names of milking staff</p> <p>_____</p> <p>_____</p> <p>_____</p>		<p>Teats clean & dry as cows enter the dairy</p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>		<p>Mark teat slips here IIII</p>	
<p>Others not present today</p> <p>_____</p> <p>_____</p> <p>_____</p>		<p>Teats are washed</p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p> <p>If YES, are they:</p> <p>Washed if dirty? <input type="checkbox"/></p> <p>Washed routinely? <input type="checkbox"/></p> <p>How? _____</p>		<p>Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Most cows <input type="checkbox"/></p>	
<p>Any recent changes</p> <p>What has changed about the milking routine in the last 6 months?</p> <p>_____</p> <p>Any staff changes/training in the last 6 months?</p> <p>_____</p>		<p>There are sufficient functional hoses to enable adequate washing?</p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p> <p>If washed, teats are dried?</p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p> <p>If YES, how? _____</p>		<p>Number of cup slips recorded: _____</p> <p>Number per 100 cows: _____</p>	
<p>Milking gloves are worn by most staff at milking time:</p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p>		<p>Pre-milking teat disinfection is used?</p> <p>YES <input type="checkbox"/> NO <input type="checkbox"/></p> <p>Comment _____</p>		<p>How do you (the advisor) rate the...</p> <p>consistency of the milking routine? <input type="checkbox"/> Low <input type="checkbox"/> Med <input type="checkbox"/> High</p> <p>understanding of the protocol for various activities by all staff? <input type="checkbox"/> Low <input type="checkbox"/> Med <input type="checkbox"/> High</p>	
<p>Cows usually enter the dairy</p> <p>On their own <input type="checkbox"/></p> <p>With help <input type="checkbox"/></p> <p>Backing gate <input type="checkbox"/></p> <p>Dog <input type="checkbox"/></p> <p>Operator <input type="checkbox"/></p> <p>Poly-pipe <input type="checkbox"/></p> <p>Comment _____</p>		<p>Effectiveness of teat disinfectant coverage was assessed by:</p> <p>Visual inspection <input type="checkbox"/></p> <p>Towel test <input type="checkbox"/></p> <p>Spray pattern <input type="checkbox"/></p> <p>Comment _____</p>		<p>The risk of mastitis in this dairy through...</p> <p>impacts is... <input type="checkbox"/> Low <input type="checkbox"/> Med <input type="checkbox"/> High</p> <p>teat cleanliness & disinfection is... <input type="checkbox"/> Low <input type="checkbox"/> Med <input type="checkbox"/> High</p>	

H. Clinical case management (Technote 4, 10)

Is MRS T followed?		Yes <input type="checkbox"/> No <input type="checkbox"/>	What could be improved?		Mark <input type="checkbox"/> Record <input type="checkbox"/> Separate <input type="checkbox"/> Treat <input type="checkbox"/>
Marking and Separation					
Detection					
Practices routinely used by milkers to detect clinical mastitis are...					
Visual inspection of the udder	<input type="checkbox"/>				
Palpation of suspect quarters	<input type="checkbox"/>				
Stripping of suspect quarters	<input type="checkbox"/>				
Regular stripping of fresh cows	<input type="checkbox"/>				
Routine stripping of the whole herd	<input type="checkbox"/>				
Frequent inspection of filter socks	<input type="checkbox"/>				
Other	<input type="checkbox"/>				
Clinical cases are usually detected at...					
Cups on	<input type="checkbox"/>				
Cups off	<input type="checkbox"/>				
All workers know the protocol to find clinical cases for treatment in this herd					
No	<input type="checkbox"/>	Yes	<input type="checkbox"/>	Don't know	<input type="checkbox"/>
Milk samples are collected from clinical cases prior to treatment					
All	<input type="checkbox"/>	Some	<input type="checkbox"/>	None	<input type="checkbox"/>
Treatment					
The treatment routine for clinical cases includes....					
Fully milking and stripping quarters out before infusing antibiotic	<input type="checkbox"/>				
Disinfecting teat ends	<input type="checkbox"/>				
Hygienic infusion technique	<input type="checkbox"/>				
Post-treatment teat disinfection	<input type="checkbox"/>				
Recording details	<input type="checkbox"/>				
Milking quarters out fully at every milking	<input type="checkbox"/>				
The treatment protocol includes....					
A full course of treatment	No	<input type="checkbox"/>	Yes	<input type="checkbox"/>	
Products used					
1.	<input type="checkbox"/>				
2.	<input type="checkbox"/>				
3.	<input type="checkbox"/>				
4.	<input type="checkbox"/>				
Comments on selection or effectiveness					
It has a separate cluster <input type="checkbox"/> The cluster is adequately washed between cows <input type="checkbox"/>					
In your opinion (as the adviser), clinical cases are likely to be:					
Missed	<input type="checkbox"/>				
Usually detected	<input type="checkbox"/>				
Over-diagnosed	<input type="checkbox"/>				
In your opinion (as the adviser), subclinical (RMT +ve only) cases are likely to be:					
Treated	<input type="checkbox"/>				
Monitored	<input type="checkbox"/>				
Ignored	<input type="checkbox"/>				

1. Teat condition (Technote 9)

If observations are missed place a cross (X) in table. If "normal" findings are left blank, tick here

Cow ID		Teat end				Skin condition				Comment		Cow ID		Teat end				Skin condition				Comment				
Mob:		No ring, Smooth		Rough, Very rough		Normal, Dry		Lesions, Haemorrhages		Score: Red, Blue, Swelling at base, Open orifice, Firm teat end		Mob:		No ring, Smooth		Rough, Very rough		Normal, Dry		Lesions, Haemorrhages		Score: Red, Blue, Swelling at base, Open orifice, Firm teat end				
		LB	RB	LF	RF	LB	RB	LF	RF	LB	RB	LF	RF	LB	RB	LF	RF	LB	RB	LF	RF	LB	RB	LF	RF	
1												26														
2												27														
3												28														
4												29														
5												30														
6												31														
7												32														
8												33														
9												34														
10												35														
11												36														
12												37														
13												38														
14												39														
15												40														
16												41														
17												42														
18												43														
19												44														
20												45														
21												46														
22												47														
23												48														
24												49														
25												50														
		Rough (%)				Lesions (%)						Rough (%)				Lesions (%)										
		Very Rough (%)				Haem (%)						Very Rough (%)				Haem (%)										

I. Teat condition *continued*

If observations are missed place a cross (X) in table. If "normal" findings are left blank, tick here

Cow ID	Teat end No ring, Smooth Rough, Very rough			Skin condition Normal, Dry Lesions, Haemorrhages			Comment Score: Red, Blue, Swelling at base, Open orifice, Firm teat end	Cow ID	Teat end No ring, Smooth Rough, Very rough			Skin condition Normal, Dry Lesions, Haemorrhages			Comment Score: Red, Blue, Swelling at base, Open orifice, Firm teat end
	LB	RB	LF	RF	LB	RB			LF	RF	LB	RB	LF	RF	
Mob:								Mob:							
51								76							
52								77							
53								78							
54								79							
55								80							
56								81							
57								82							
58								83							
59								84							
60								85							
61								86							
62								87							
63								88							
64								89							
65								90							
66								91							
67								92							
68								93							
69								94							
70								95							
71								96							
72								97							
73								98							
74								99							
75								100							
	Rough (%) Very Rough (%)			Lesions (%) Haem (%)					Rough (%) Very Rough (%)			Lesions (%) Haem (%)			

J. Milking observations (Technote 6)



Cow ID	Hygiene* (1,2, 3, 4)	Count kicks and steps relating to rear legs				Clock time (00:00) at:				Milking time per cow (mins)			Teat spray coverage (Adequate, Poor)		
		In stall waiting	Cup attachment	First 2 mins milking	Last 2 mins milking	Cups on	True flow starts	Flow ends	At cups off	Delayed flow	Flow time	Over milking time	Backs	Fronts	
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															
Total cows															
Cows with 3, 4 hygiene score, Kist response															

*Hygiene scores:
 1 = Free of dirt
 2 = Slightly dirty (2 – 10 % of surface area)
 3 = Moderately covered with dirt (10 – 30 % of surface area)
 4 = Covered with caked on dirt (>30% of surface area)

Assess teat spray coverage:
 Adequate = barrel and teat end covered fully
 Poor = barrel not fully covered, teat end not fully covered.

mins

%

Cows with delayed let down (>1min)

Average milk flow time per cow

Average duration of over milking

mins

K. Completeness of milking

Alternative ways for assessing completeness of milk-out are shown in this table, reproduced from Technote 6, page 6

Cow ID	Strip yields per quarter (mL) L less than 50 mL, M 50-100 mL, H more than 100mL or use Good, Poor, Uneven
Identify quarters →	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
No. of quarters	
Quarters yielding more than 100 mL	
Percentage of all quarters	
	%

Record milk-out as:	Qualitative assessment	Semi-quantitative (hand-stripping of individual quarter)	Machine-stripping (based on whole udder)
G (Good)	Quarter is visibly wrinkled	5 or fewer easy strips (equating to <50 mL per quarter)	Less than 500 mL per udder
P (Poor)	Quarter appears slightly plump, possibly indicating unharvested milk	10 or more easy strips (equating to more than about 100 mL per quarter)	More than 500 mL per udder
U (Uneven)	One particular quarter appears plumper and less wrinkled, relative to the other quarters		

L. Teat spray preparation (Technote 7)

The stock product (as purchased)	
Brand:	
ACVM registered?	YES <input type="checkbox"/> NO <input type="checkbox"/>
Product type	Concentrate to mix with water <input type="checkbox"/> Ready to use <input type="checkbox"/>
The active ingredient	Iodine gm/L Chlorhexidine gm/L Other gm/L gm/L
Contains emollient? (If YES, what is the concentration)	YES <input type="checkbox"/> NO <input type="checkbox"/>
Storage on farm	
Product out of direct sunlight?	YES <input type="checkbox"/> NO <input type="checkbox"/>
Product container sealed at all times?	YES <input type="checkbox"/> NO <input type="checkbox"/>
Comments	
Application	
Applied by/for	Spray <input type="checkbox"/> Whole season <input type="checkbox"/> Dip <input type="checkbox"/> Part season <input type="checkbox"/>
If spray, which delivery method	Portable hand-held bottle <input type="checkbox"/> In-line wands <input type="checkbox"/> Automated <input type="checkbox"/>
Spray nozzle stream is	Angled <input type="checkbox"/> Vertical <input type="checkbox"/> Horizontal <input type="checkbox"/>
Volume of prepared teat disinfectant used per cow	
Volume used per milk (Total volume ÷ no of cows milked)	ml/cow

Mixing do not complete area if using a Ready-to-use product	
Teat disinfection mix (as applied)	
Quantity mixed in each batch	litres
The mix	
Concentrate	litres
Added emollient (Name of product)	litres
Water	litres
Calculated active mix	%
If available, tested active	%
Calculated emollient in mix	%
The water used	
Source	Tank <input type="checkbox"/> Other <input type="checkbox"/> Town <input type="checkbox"/> Bore <input type="checkbox"/>
Via hot water system?	YES <input type="checkbox"/> NO <input type="checkbox"/>
Treated with any chemicals?	
Water has been tested	YES <input type="checkbox"/> NO <input type="checkbox"/>
If available, tested hardness/alkalinity/..... ppm
Bacterial count	cfu/ml

The routine	
Who mixes the solution?	
Are components measured correctly?	YES <input type="checkbox"/> NO <input type="checkbox"/>
How often is the mix made up?	
Are dedicated measuring containers used?	YES <input type="checkbox"/> NO <input type="checkbox"/>
Do the containers keep the prepared mix clean	
Any recent changes? Has anything changed in the last 6 months? (product type, application, mixing, operators etc)	
Any further comments	

M. The environment (Technote 1, 26)

<p>Dry cows</p> <p><input type="checkbox"/> Cows udders are likely to get dirty</p> <p><input type="checkbox"/> Cows stay relatively clean</p>	<p>Springers</p> <p><input type="checkbox"/> Cows udders are likely to get dirty</p> <p><input type="checkbox"/> Cows stay relatively clean</p>	<p>Milkers</p> <p><input type="checkbox"/> Cows udders are likely to get dirty</p> <p><input type="checkbox"/> Cows stay relatively clean</p>
<p>Where are cows grazed in dry period?</p> <p><input type="checkbox"/> On farm, on pasture</p> <p><input type="checkbox"/> On farm, on crop</p> <p><input type="checkbox"/> Run-off - on pasture</p> <p><input type="checkbox"/> Run-off - on crop</p> <p><input type="checkbox"/> Other</p>	<p>In wet weather, springers are regularly stood off-pasture:</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>If YES, where are they mainly held?</p> <p><input type="checkbox"/> Races/laneways</p> <p><input type="checkbox"/> Milking yards</p> <p><input type="checkbox"/> Feed pad</p> <p><input type="checkbox"/> Covered housing</p> <p><input type="checkbox"/> Other</p>	<p>In wet weather, milkers are regularly stood off-pasture:</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>If YES, where are they mainly held?</p> <p><input type="checkbox"/> Races/laneways</p> <p><input type="checkbox"/> Milking yards</p> <p><input type="checkbox"/> Feed pad</p> <p><input type="checkbox"/> Covered housing</p> <p><input type="checkbox"/> Other</p>
<p>Are manual checks of udders carried out in dry period?</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>If YES, how often:</p>	<p>In wet weather, how is grazing adjusted?</p> <p><input type="checkbox"/> No change</p> <p><input type="checkbox"/> Back fenced</p> <p><input type="checkbox"/> Increase break size</p> <p><input type="checkbox"/> Other</p>	<p>Is a feed pad and/or housing system used daily?</p> <p>Feed Pad <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Housing system <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Notes:</p>
<p>When do springers return to farm, prior to planned start of calving (PSC)?</p> <p><input type="checkbox"/> > 1 month</p> <p><input type="checkbox"/> 4-2 weeks</p> <p><input type="checkbox"/> <2 weeks</p> <p><input type="checkbox"/> doesn't apply</p>	<p>When are calves removed after calving?</p> <p><input type="checkbox"/> > 24 h</p> <p><input type="checkbox"/> 12- 24 h</p> <p><input type="checkbox"/> 12 h or less</p>	<p>How many cases of milk fever/other metabolics occur in the herd?</p> <p>What was the herd average BCS at calving?</p>

<p>Dry cows</p> <p><input type="checkbox"/> Cows udders are likely to get dirty</p> <p><input type="checkbox"/> Cows stay relatively clean</p>	<p>Springers</p> <p><input type="checkbox"/> Cows udders are likely to get dirty</p> <p><input type="checkbox"/> Cows stay relatively clean</p>	<p>Milkers</p> <p><input type="checkbox"/> Cows udders are likely to get dirty</p> <p><input type="checkbox"/> Cows stay relatively clean</p>
<p>Where are cows grazed in dry period?</p> <p><input type="checkbox"/> On farm, on pasture</p> <p><input type="checkbox"/> On farm, on crop</p> <p><input type="checkbox"/> Run-off - on pasture</p> <p><input type="checkbox"/> Run-off - on crop</p> <p><input type="checkbox"/> Other</p>	<p>In wet weather, springers are regularly stood off-pasture:</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>If YES, where are they mainly held?</p> <p><input type="checkbox"/> Races/laneways</p> <p><input type="checkbox"/> Milking yards</p> <p><input type="checkbox"/> Feed pad</p> <p><input type="checkbox"/> Covered housing</p> <p><input type="checkbox"/> Other</p>	<p>In wet weather, milkers are regularly stood off-pasture:</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>If YES, where are they mainly held?</p> <p><input type="checkbox"/> Races/laneways</p> <p><input type="checkbox"/> Milking yards</p> <p><input type="checkbox"/> Feed pad</p> <p><input type="checkbox"/> Covered housing</p> <p><input type="checkbox"/> Other</p>
<p>Are manual checks of udders carried out in dry period?</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>If YES, how often:</p>	<p>In wet weather, how is grazing adjusted?</p> <p><input type="checkbox"/> No change</p> <p><input type="checkbox"/> Back fenced</p> <p><input type="checkbox"/> Increase break size</p> <p><input type="checkbox"/> Other</p>	<p>Is a feed pad and/or housing system used daily?</p> <p>Feed Pad <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Housing system <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Notes:</p>
<p>When do springers return to farm, prior to planned start of calving (PSC)?</p> <p><input type="checkbox"/> > 1 month</p> <p><input type="checkbox"/> 4-2 weeks</p> <p><input type="checkbox"/> <2 weeks</p> <p><input type="checkbox"/> doesn't apply</p>	<p>When are calves removed after calving?</p> <p><input type="checkbox"/> > 24 h</p> <p><input type="checkbox"/> 12- 24 h</p> <p><input type="checkbox"/> 12 h or less</p>	<p>How many cases of milk fever/other metabolics occur in the herd?</p> <p>What was the herd average BCS at calving?</p>

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