VAL-225 Procedure for Performing Steam in Place (SIP) Validation

Appendix A: Lock Out Tag Out Form

This lock out tag out form is to be linked to a work permit. The permit issuer must sign off this lock

Plant ID:	Equipment Description:	Area:
P & ID Reference:	Drawing No.	Date:
Scope of Work:		

Lockout Type	**Name**	**Name**	**Name**	**Name**
Description: ID:	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed
Description: ID:	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed
Description: ID:	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed
Description: ID:	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed
Description: ID:	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed
Description: ID:	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed
Description: ID:	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed
Description: ID:	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed
Description: ID:	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed
Description: ID:	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed	☐ Locked ☐ Removed
Initial and date as All **Locked**				
Initial and date as All **Removed**				

out tag out form as part of the work permit process. Keep a copy of this form with the permit to work form.

☐ All Locked	Name:	Signature:	Date:
☐ All Removed	Name:	Signature:	Date:

Forward the form to the EHS Specialist when completed for filing.

VAL-225 Procedure for Performing Steam in Place (SIP) Validation

Appendix B: Equipment Tag Out for Validation

1. Purpose

The purpose of this operating Instruction is to outline the procedure for removing a piece of equipment from routine service for the purposes of conducting validation (also referred to as “tag-out”).

2. SCOPE

These procedures apply to all equipment and facilities located at a GMP site.

3. Procedure for Placing equipment “tag-out”

4. *Obtain permission from the equipment owner to place the equipment (or equipment train) out of routine service for validation.*

5. *Complete a label containing the information required as shown in the attached templates (see section 5). The person who places the label must record the date the equipment is “tagged-out”, sign and record their contact extension. (N.B. Electronic copies of the labels may be generated from the label templates).*

6. *The label must be securely attached to the equipment in a position such that the label is readily visible. If necessary additional labels may be placed at critical locations e.g. next to the equipment operation controls.*

7. procedure for returning equipment to production use

4.1 *Complete the label field “Returned By” and sign and date the label.*

- Complete equipment usage/log book
- Attach the label (or a copy) to equipment usage/manufacturing records
- Attach the label (or a copy) to validation report

8. Equipment “tag-Out” Label Templates

5.1 Large Format Label Template

[Company Name]
[Address]

UNDERGOING VALIDATION

DO NOT USE WITHOUT VALIDATION APPROVAL

Authorized by:	_____	_____	_____
	Name	Signature	Date
Returned by:	_____	_____	_____
	Name	Signature	Date

Contact Ext: _____

5.2 Small Format Label Template

UNDERGOING VALIDATION DO NOT USE WITHOUT VALIDATION APPROVAL	
Contact Ext.	
Placed By	
Sign	
Date	
Returned By	
Sign	
Date	
[Company Name] *[Address]*	

VAL-225 Procedure for Performing Steam in Place (SIP) Validation

Appendix C: Rationale and Schedule for Steam in Place (SIP) Validations on Tanks, Transfer Lines, Filters, and Manifolds - Example

This document lists all of the Tanks, Transfer Lines, Filters and Manifolds that require validation and the schedule of each validation. This document must be reviewed yearly in January.

1.0 Table of equipment, associated risk assessments and validation schedule

Area	Equipment	Equipment Number	Risk Assessment Project Number	SIP Validation Status	Project Number	Date Completed	Scheduled Date
Filling	Tank	FT01		Validated			
		FT02		Validated			
		FT03		Validated			
		FT04		Validated			
		FT05		Validated			
		FT06		Validated			
Blending	Tank	BT01		Validated			
		BT02		Validated			
		BT04		Validated			
		BT05		Validated			
		BT06		Validated			
		BT07		Validated			
		BT08		Validated			
Antigen	Tank	IT01		Validated			
		IT02		Validated			
		IT03		Validated			
		IT04		Validated			
		IT08		Validated			
		IT09		Validated			
		PT01		Validated			
		PT02		To be validated			
		MV01		Validated			
		MV03		Validated			
		CV04		Validated			
		CV05		Validated			
		CV06		Validated			
		FV02		Validated			
		MV04		Validated			
Antigen and Blending	Filters	Blending and Antigen Filters		Validated			
Filling	Transfer Lines	Filling Lines FM01 and FM02		Validated			
Filling and Blending		Blending and Antigen Transfer Lines		Validated			

Area	Equipment	Equipment Number	Risk Assessment Project Number	SIP Validation Status	Project Number	Date Completed	Scheduled Date
Antigen		Antigen Transfer Lines		Validated			
Blending	Manifold	Antigen Addition Manifold		Validated			

TBC = To Be completed prior to the start of validating the piece of equipment, [1] to [8] and [1a] to [9a] = Tanks have been grouped for the purpose of revalidation refer to Section 1.2 and 1.4 for details.

1.1 Transfer Line Matrix for the Filling and Blending Areas

Not all transfer line configurations can be validated at the one time. Therefore, a total of eight transfer line configurations will be selected from the three tables below each year that represent the worst case scenarios (longest transfer lines) and also representative of the whole transfer line system. The transfer lines between filling and blending area equipment are considered high risk due to their extensive use and length of pipe work that requires sterilization. Thus, the transfer lines in either the blending or filling areas alone are classified as low risk due to their occasional use and shorter line distance when compared to the transfer lines connecting the blending and filling areas.

Tables 2 to 6 must be taken into consideration when selecting the eight transfer line configurations for the purpose of revalidating. A total of three successful runs are required to be completed for a transfer line configuration not previously validated and only one successful run is required for a previously validated transfer line configuration. The direction of the steam that is most commonly used during production should be used for revalidations. Regarding the initial validation the number of runs required, detailed process and acceptance criteria is outlined in procedure VAL-225 "*Procedure for performing SIP validations*".

Table 2. Blending Tank ↔ Filling Tank (High Risk)

Donor Vessel	Receiving Vessel							
FT01	to either	BT01	BT02	BT04	BT05	BT06	BT07	BT08
FT02	to either	BT01	BT02	BT04	BT05	BT06	BT07	BT08
FT03	to either	BT01	BT02	BT04	BT05	BT06	BT07	BT08
FT04	to either	BT01	BT02	BT04	BT05	BT06	BT07	BT08
FT05	to either	BT01	BT02	BT04	BT05	BT06	BT07	BT08
FT06	to either	BT01	BT02	BT04	BT05	BT06	BT07	BT08

Table 3. Filling Tank ↔ Filling Tank (Low Risk)

Donor Vessel	Receiving Vessel					
FT01	to either	FT02	FT03	FT04	FT05	FT06
FT02	to either	FT03	FT04	FT05	FT06	
FT03	to either	FT04	FT05	FT06		
FT04	to either	FT05	FT06			
FT05	to	FT06				

Table 4. Blending Tank ↔ Blending Tank (Low Risk)

Donor Vessel	Receiving Vessel						
BT01	to either	BT02	BT04	BT05	BT06	BT07	BT08
BT02	to either	BT04	BT05	BT06	BT07	BT08	
BT04	to either	BT05	BT06	BT07	BT08		
BT05	to either	BT06	BT07	BT08			
BT06	to either	BT07	BT08				
BT07	to	BT08					

Donor vessel refers to the vessel in which the steam source comes from.

The three diagrams below outline the route of each of the three different transfers that may occur in both the blending and filling areas.

Diagram 1 – Blending Tank To Blending Tank

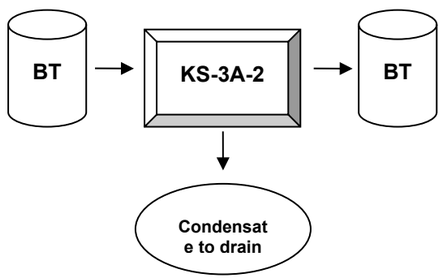


Diagram 2 – Filling Tank to Filling Tank

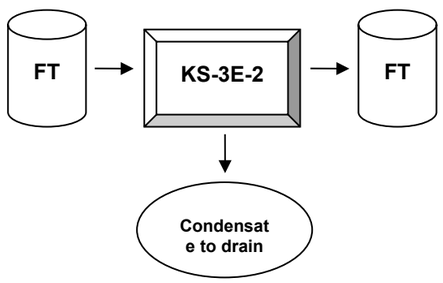
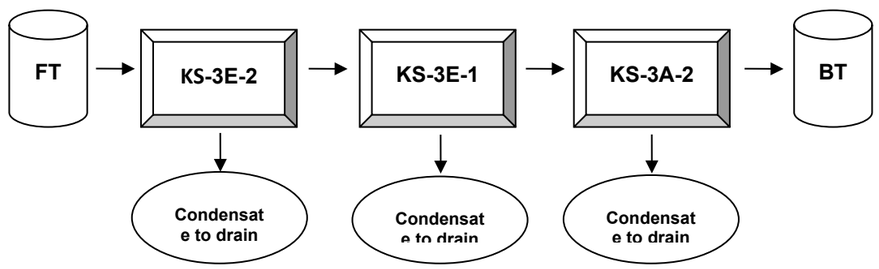


Diagram 3 – Filling Tank to Blending Tank



Both the tables below (Table 5 and 6) show the actual length of transfer pipe between the bases of the tanks to the relevant key stations. In regards to Diagram 3, shown above, the length of transfer pipe between key station KS-3E-2 and KS-3A-2 is 10.3 meters and is common for transfers between the blending and filling tanks.

Table 5	
Tank	**Length of Pipe to KS-3A-2**
BT01	8.7m
BT02	6.7m
BT04	1.8m
BT05	2.6m
BT06	5.0m
BT07	10.6m
BT08	12.0m

Table 6	
Tank	**Length of Pipe to KS-3E-2**
FT01	7.6m
FT02	4.9m
FT03	5.5m
FT04	8.8m
FT05	7.0m
FT06	12.4m

A transfer line matrix will be completed for the Antigen area prior to starting the validation of the transfer lines in the antigen area.

1.2 Revalidation of tanks in the Filling and Blending Areas

All tanks on site must be validated initially. Regarding the initial validation the number of runs required, detailed process and acceptance criteria is outlined in procedure VAL-225 *"Procedure for performing SIP validations".*

Then all tanks must be validated on a yearly basis as per Table 1 on page 1. For the purpose of revalidation all filling tanks (FT) and blending tanks (BT) have been classified into eight different groups in accordance to their volume, internal diameter and the number of connections. Only one tank from each group must be revalidated each year. Table 7 below summarizes the eight (8) different groups:

Table 7				
Tank Group	**Tank Number**	**Maximum Volume**	**Internal Diameter**	**Number of connections**
1	FT01	6000L	1800mm	10
	FT02			
	FT06			
2	FT03	4000L	1524mm	10
	FT04			
	BT06			
3	FT05	4000L	1650mm	12
4	BT01	2000L	1200mm	14
	BT04			
5	BT02	1000L	950mm	11
6	BT05	2000L	1190mm	11
7	BT07	6000L	1800mm	12
8	BT08	6000L	1800mm	12

Revalidation of tanks will only require one successful run to be completed for each state empty and full, except for filling tanks where one run is required to be completed when the tank is in an empty state only.

In regard to full tank sterilizations water has been chosen as the solution to be sterilized and a typical production mixing speed must be used.

A similar grouping of tanks will be completed for all tanks in the Antigen area and will be added to this document prior to the start of the initial validation.

1.3 Revalidation of Filters and Manifolds

All filters and manifolds on site must be validated initially. Regarding the initial validation the number of runs required, detailed process and acceptance criteria is outlined in procedure VAL-225 *"Procedure for performing SIP validations".*

Then all filters and manifolds must be validated on a yearly basis as per Table 1 on page 1. Revalidation of a filter or manifold will only require one successful run to be completed.

1.4 Revalidation of tanks in the Antigen Area

All tanks on site must be validated initially. Regarding the initial validation the number of runs required, detailed process and acceptance criteria is outlined in this SOP.

For the purpose of revalidation not all tanks in the Antigen Area will be validated each year. Only the three (3) culture vessels (CV04, CV05 and CV06) must be re-validated each year because are used to sterilize Bio Security materials. Thus, any equipment used to sterilize AQIS material must be validated on an annual basis. The remaining tanks have been categorized into the following nine groups shown in the table below and one tank from each group will be revalidated every two years. The tanks have been categorized according to tank volume, internal diameter and the number of connections to the tank.

Table 8

Tank Group	Tank Number	Maximum Volume	Internal Diameter	Number of connections
1a	IT01	4000L	152cm	15
	IT02			
2a	IT03	6000L	180cm	15
	PT02			
3a	IT04	6000L	180cm	19
	IT08			
4a	IT09	10000L	230cm	14
5a	PT01	4000L	125cm	15
6a	MV01	500L	60cm	9
7a	MV03	500L	70cm	8
8a	FV02	750L	55cm	16
9a	MV04	350L	80cm	7

Revalidation of tanks will only require one successful run to be completed for each state empty and full, except for MV01, MV03 and MV04 tanks where one run is required to be completed when the tank is in an empty state only.

In regard to full tank sterilizations, water has been chosen as the solution to be sterilized and the stirrer should be set to the normal production mixing speed must be used.

VAL-225 Procedure for Performing Steam in Place (SIP) Validation

Appendix D: Sterilisation in Place: Validation Protocol Plan Approval

Protocol Plan Detail							Sign / Date
Validation Project No.							
Validation Type	Vessel ❑ Line ❑			Line Start: _____ Line End: _____			
Vessel or Line ID:		Area (circle)	2A / 2D / 2F / 3A / 3E				
Vessel Working Volume Range							
Validation Type:	Re-Validation ❑			Initial ❑			
	Previous Validation Project Reference						
Minimum Number of Trials Empty	1 / 2 / 3 or Specify _____						
Minimum Number of Trials Filled	Total: 1 / 2 / 3 or Specify _____						
	Min. Filled SIP Volume		No. Trials				
	Max. Filled SIP Volume		No. Trials				
Vessel Under DoA Control	Yes ❑			No ❑			
Vessel SIP SOP Reference							
Vessel SIP Full Cycle Time (min)	Empty						
	Filled						
SIP Trial Evaluation Time (min)	Empty	Half-Cycle ❑		Full-Cycle❑			
	Filled	Full -Cycle ❑		Other ❑			
Justification for Time Modification							

Approval of the Validation Plan Execution	Name	Sign / Date
Initiated By: (Validation Engineer)		
Reviewed By: (Validation Supervisor or Delegate)		
Approved By: (Quality Manager/ QA Manager or Delegate)		

Appendix E: Sterilisation in Place – Vessel Execution Record

Project No	Vessel No	Run No	Number of Runs

1. OBJECTIVE

Using an appropriate sterilisation cycle, demonstrate that the tested cycle will, with a high degree of assurance sterilise the vessel. Each cycle should consider the location(s) within a vessel considered to demonstrate worst case conditions.

2. PROCEDURE

2.1. Standard Procedures and Operator Instructions

	Initial / Date
Before commencement of the qualification, ensure a pre-sterilisation documentation review has been conducted as per VAL-270 “Critical Documentation Verification during a Validation Study” and documented.	

NOTE: THIS DOCUMENT MUST BE REPRODUCED FOR EACH CYCLE

Load Description (include material type and volume if full vessel cycle)

2.2. Test Instrumentation

Instrument Number	Instrument Name or Description	Date of Calibration	Calibration Due Date

2.3 Calibration and Verification of Test Devices

	Initial / Date
Confirm the data logger has a minimum sample rate of 5 seconds and all test equipment has been calibrated and or verified as per written instructions.	

2.4. Biological Indicators

Indicator Type (strikethrough non-relevant indicator(s))	EZ-Test Crushable Ampoule (DRY)	Glass Ampoule (WET)	Spore Strip (DRY)
Lot Number			
Organisms	*G.Stearothermophilus*	*G.Stearothermophilus*	*G.Stearothermophilus*
Population			
Manufacturer			
Manufacture Date			
Expiration Date			

Confirm that the BIs have not expired the manufacturers and expiration date.	**Initial / Date**

2.5. Thermocouples and Biological Indicator Placement

Record and confirm the distribution of thermocouples and BIs throughout the vessel in attachment Appendix F.	**Initial / Date**

2.6 Filter Inlet Sterilisation (External Temperature Monitoring)

Start the data logger and commence the inlet filter sterilisation when the internal temperature reads above the minimum sterilisation temperature and/or the SOP conditions are met for commencement of filter Sterilisation.

For initial sterilisation validation only, record the surface temperatures at five minute intervals for the duration of the sterilisation cycle time

For routine re-validation record the external temperatures at the start, middle and end of the SIP procedure. Use Appendix G to record the external temperature monitoring data.

Sterilisation Start Time	Sterilisation Finish Time	Sterilisation Duration (min)	Minimum External Temp. Achieved (°C)

Initial / Date: _____

2.7 Vessel Sterilisation External Temperature and Pressure Monitoring

Start data logger and commence the heating until the minimum SIP temperature is reached at all monitoring locations and/or the SOP conditions are met for commencement for vessel sterilisation.

Record the external surface temperature and vessel gauge pressure at five-minute intervals for the duration of the sterilisation cycle time for initial sterilisation validation.

For routine re-validation external temperature monitoring is not required during the vessel SIP procedure evaluation.

SIP Stage	Start Time	Finish Time	Duration (min)	Minimum External Temp. Achieved (°C)	Pressure Range during SIP (kPa)
Heating					
Sterilisation					

Initial / Date: _____

Note: Cool the vessel on completion of the sterilisation cycle to a minimum of 60°C.

3. Post Cycle

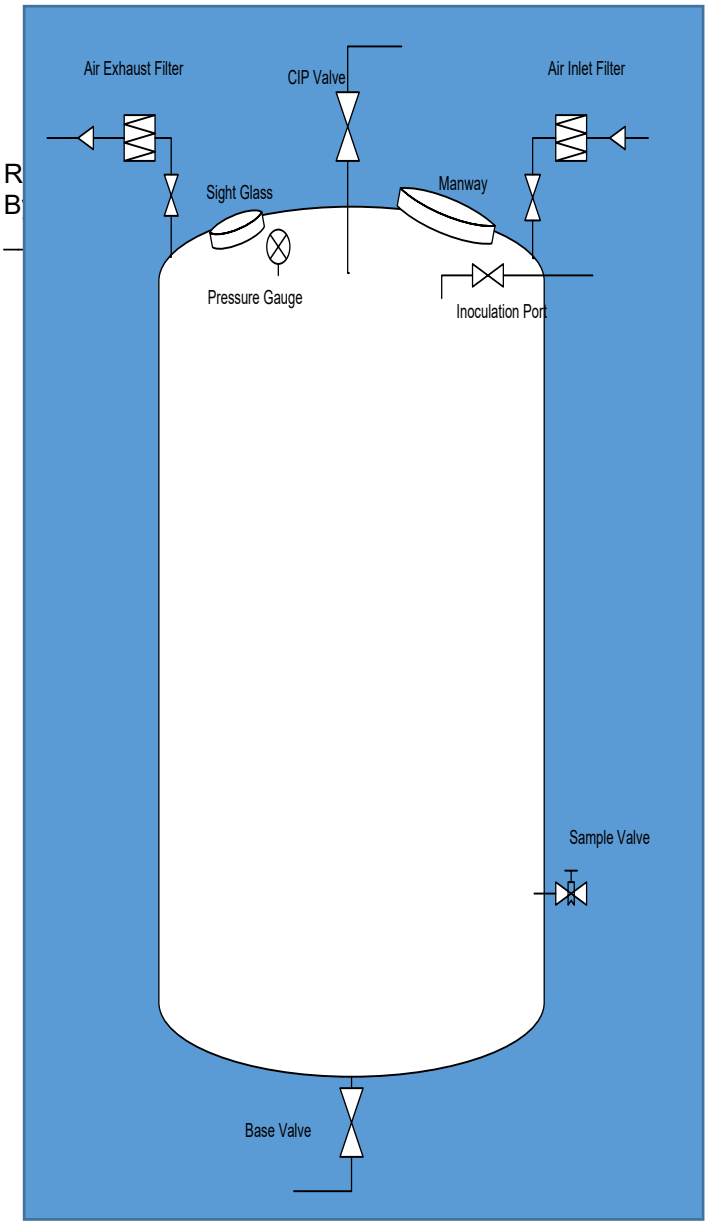
	Circle Applicable	Deviation No.
Biological Indicators retrieved from each location and submitted along with both the exposed and control BI. During submission, the indicator dependent Test Results Sheets shall have been submitted to Quality Control for sterility testing.	YES / NO	
Post-calibration verification results of thermocouples have been recorded.	YES / NO	
Thermocouples are within reference check point verification temperature ranges	YES / NO	

Initial / Date: _____

Appendix F: Sterilisation in Place Validation – Vessel Diagram

Project No		Vessel No		Run Number	

Location	BI	T/C	Ext. Temp
Air Inlet Filter			
Air Exhaust Filter			
CIP Sprayball / Inlet			
Pressure Gauge			
Inoculation Port			
Vessel Pressure Relief Valve			
Manway			
Sight glass			
Stirrer Well			
Base Valve			
Sample Valve			



Draw on Stirrer, CIP sprayball configuration and additional input lines where applicable.

Recorded By:_____ Date: _____

VAL-225 Procedure for Performing Steam in Place (SIP) Validation

Appendix G: Sterilisation in Place Validation– Data Collection Table

Vessel Inlet Air Filter SIP Manual Data Collection Record (Reproduce as necessary)

Time							
Monitoring Point Location	Temp (°C)	Temp (°C)	Temp (°C)	Temp (°C)	Temp (°C)	Temp (°C)	Temp (°C)
Top Filter Housing							
Middle Filter Housing							
Bottom Filter Housing							
Valve_____							
Valve_____							
Valve_____							
Pressure	kPa	kPa	kPa	kPa	kPa	kPa	kPa
Input Steam							

Vessel and Exhaust Air Filter External Point SIP Manual Data Collection Record

Time							
Monitoring Point Location	Temp (°C)	Temp (°C)	Temp (°C)	Temp (°C)	Temp (°C)	Temp (°C)	Temp (°C)
Top Filter Housing							
Middle Filter Housing							
Bottom Filter Housing							
Pressure	kPa	kPa	kPa	kPa	kPa	kPa	kPa
Input Steam							
Gauge in Place							

Recorded By:_____ Date: _____

VAL-225 Procedure for Performing Steam in Place (SIP) Validation

Appendix H: Sterilisation In Place – Transfer Lines Execution

Project No		Run No.		No. of runs	

1. OBJECTIVE

Using an appropriate sterilisation cycle, demonstrate that the tested cycle will, with a high degree of assurance sterilise the transfer line. Each cycle should consider the location(s) within a line considered to demonstrate worst case conditions.

THIS DOCUMENT MUST BE REPRODUCED FOR EACH CYCLE

Line Description and Direction of Steam

Line Start ------→ **Key-Station** ------→ **Key-Station** ------→ **Key-Station** ------→ Line Terminus
(Steam Source) **KS - ____ - ____** **KS - ____ - ____** **KS - ____ - ____**

2. PROCEDURE

2.1. Standard Procedures and Operator Instructions

	Initial/Date
Before commencement the qualification ensures a pre-sterilisation documentation review has been conducted and documented as per **VAL-270** "Critical Documentation Verification during a Validation Study".	

2.2. Test Instrumentation

Instrument Number	Instrument Name or Description	Date of Calibration	Calibration Due Date

2.3. Calibration and Verification of Test Devices

	Initial/Date
Confirm the data logger has a minimum sample rate of 5 seconds and all test equipment has been calibrated and or verified as per written instructions.	

2.4. Biological Indicators (BIs)

Sign/Date

Verify that the BIs have not expired and record the population, organism, lot number, manufacturer and expiration date of each lot.

Indicator Type (cross out non relevant indicators)	EZ-Test Crushable Ampoule (DRY)	Spore Strip (DRY)
Lot Number		
Organisms	*G.Stearothermophilus*	*G.Stearothermophilus*
Population		
Manufacturer	Mesalabs	Mesalabs
Manufacture Date		
Expiration Date		

2.5. Thermocouples and Biological Indicator placement

Sign/Date

Distribute the calibrated thermocouples and biological indicators at the depicted locations in Appendix I.

2.6. Conduct Sterilisation of the Transfer Line(s)

2.6.1. Start the data logger with a minimum data sample rate of 5 seconds and perform the cycle to be validated.

Sign/Date

2.6.2. **Temperature Stabilisation:** Record the time it takes for the internal temperature to stabilise at the required value (≥ 121.0°C).

Start Time	Finish Time	Total Stabilisation Time (min)	Stabilised Temperature (°C)

2.6.3. **Transfer Line Sterilisation**

Commence the heating until the minimum SIP temperature is reached at all monitoring locations and/or the SOP conditions are met for commencement for pipe-work sterilisation.

For new equipment validation, record surface temperature and line pressure at five-minute intervals using Appendix J for the duration of the sterilisation cycle time.

For routine re-validation, record the external temperature of the pipework at the start, middle and end of the SIP process and line pressure at the locations nominated on form Appendix J.

Start Sterilisation Time	Finish Sterilisation Time	Sterilisation Time (Mins)	Minimum Temperature Achieved (°C)	Pressure Range During SIP Achieved (kPa)

Sign _____ **Date** _____

2.6.4. **Line Cooling –** At the completion of the sterilisation cycle cool the transfer line.

Start Cooling Time	Finish Cooling Time	Total Cooling Time	Temperature achieved at the end of Cooling

Sign _____ **Date** _____

2.7. Post Cycle

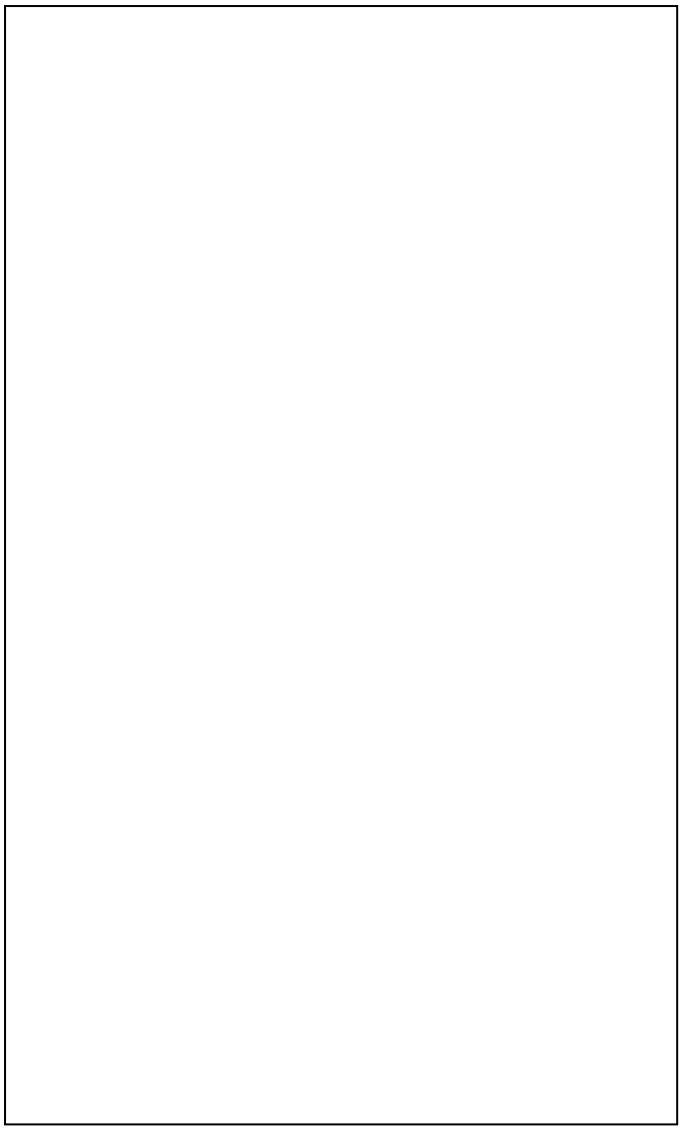
	Circle Applicable
Biological Indicators retrieved from each location and submitted along with both the exposed and control BI. During submission, the indicator dependent Test Results Sheets shall have been submitted to Quality Control for sterility testing.	YES / NO
Post-calibration verification results of thermocouples have been recorded.	YES / NO
Thermocouples are within reference check point verification temperature ranges as stipulated by Appendix O or Appendix P	YES / NO

Sign _____ **Date** _____

Upon completion of the test, attach this document to the final Validation Report.

Appendix I: Sterilisation in Place Validation – Transfer Line Diagram

Project Number	Transfer Line	Run Number	No. Runs
	Source:		
	Terminus:		



Transfer Line Sterilisation				
#	Description	BI	T/C	Ext. Temp
1	Valve Source _____			
2	Valve Terminus _____			
3	Key Station 1			
4	Key Station 2			
5	Key Station 3			
6	Drain at _____			
7	Drain at _____			
8				
9				
10				
11				
12				
13				
14				
15				
16				

Figure 1: Diagram representing the transfer line configuration

	Name	Signature	Date
Performed By			
Checked By			

Appendix J: Sterilisation in Place Validation – Transfer Lines

Project Number	Transfer Line	Run Number	No. Runs
	Source:		
	Terminus:		

Transfer Line External Point SIP Manual Data Collection Record from Source Point to Line Terminus

Time																			
Monitoring Point Location	Temp (°C)		Temp (°C)		Temp (°C)		Temp (°C)		Temp (°C)		Temp (°C)		Temp (°C)		Temp (°C)		Temp (°C)		Temp (°C)
Pressure	kPa		kPa		kPa		kPa		kPa		kPa		kPa		kPa		kPa		kPa
Input Steam																			
Gauge in Place																			

Performed by: _____ **Date:** _____ **Checked by:** _____ **Date**: _____

Appendix K: Sterilization in Place – Validation Summary Report

Report Detail			
Validation Project No.			
Validation Type	Vessel ❑ Line ❑ Other:_____	Line Start:_____ Line End:_____	
Vessel / Line / Equip ID:		Area (circle)	
Vessel or Line Group:			

Report Approvals	
Final Validation Status	☐ The Performance Qualification has met the acceptance criteria and the process/procedure is considered validated. ☐ The Performance Qualification is considered acceptable with suitable justification for protocol deviations. The process/procedure is considered validated. The protocol deviations are not considered critical for validation. ☐ The Performance Qualification has not met the acceptance criteria. The protocol deviations are considered critical and must be corrected before the next validation activity.

Comments

Validation Activities Conducted By:	Name	Sign/Date
Validation Engineer or Supervisor		
Validation Activities Approved By:	**Name**	**Sign/Date**
Validation Supervisor or Delegate		
Quality Manager / QA Manager or Delegate		

Validation Reporting				
Instructions / Attachment / Reporting Requirement		**Reporting Requirement (Pass/Fail/ Completed/Attached)**	**Deviation(s) (Yes - #(s) / No)**	**(Sign/Date)**
1	Validation Protocol Plan was completed as approved.			
2	Thermocouple temperature calibration verification sheets are attached and have met the pre and post-use acceptance criteria for the respective logger.			
3	Following forms are completed and attached for all Vessel SIP trials • Form-880 Sterilisation In Place Vessel Execution Record (**Appendix E**) • Form-885 Sterilisation In Place Validation Vessel Diagram (**Appendix F**) • Form-890 Sterilisation In Place Validation - Data Collection Table (**Appendix G**) Following forms are completed and attached for all Line SIP trials • Form-895 Sterilisation In Place Validation – Transfer Lines (**Appendix J**) • Form-900 Sterilisation In Place Validation – Transfer Line Diagram (**Appendix I**) • Form-905 Sterilisation In Place – Transfer Lines Execution (**Appendix H**)			
4	• Form-910 Critical Documentation Verification – Post Execution, and • Form-915 Critical Documentation Verification – Pre-Execution, are completed.			
5	SIP Trial Data Sheets are completed for each trial			
6	SIP Trials have met their respective acceptance criteria			
7	Department of Agriculture requirements satisfied. (if applicable)			
8	“Trial execution summary” table completed			
9	“Attachments List” table completed			
10	“Deviation Reports List” Table completed, and deviation reports completed and attached.			

11	Recommendations (if any) included on the validation CAPA follow-up register			
12	Any QA deviations raised in the QA Deviation Manager System associated with this validation project are closed.			

Trial Execution Summary Table									
Trial No.	**Trial Type (Empty/ Full/Line/Manifold)**	**Min Temp in SIP Phase (°C)**	**Max Temp in SIP Phase (°C**	**Min F_0 (min)**	**Max F_0 (min)**	**Steam saturation conditions met (Yes/No)**	**Biological Indicator Tests Met Acceptance Criteria (Yes/No)**	**Deviation (s) (Yes - #(s) / No)**	**Trial Status (Pass / Accepted Under Deviation/ Not Accepted)**
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

Attachments List			
Attachment No.	**Attachment Description**	**Associated Deviation Report (Yes - # / No)**	**(Sign/Date)**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			

Deviation Reports List			
Deviation Number	**Brief Description of the Deviation Report**	**Critical Impact on Validation Trial Status (Yes / No)**	**(Sign/Date)**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			

VAL-225 Procedure for Performing Steam in Place (SIP) Validation

Sterilisation – In – Place Trial Data Sheet			
Report Attachment No.		Project No.	
Validation Type	Vessel ❑ Line ❑ Other:_____	Line Start: Line End:	
Vessel/Line ID:			
SIP Type	Empty ❑ Full ❑	If Filled Specify Volume: _____	
Trial No.			

SIP Trial Data Sheet Attachments Check List			Completed	Sign/Date
1	Print – out of Thermometric and Barometric Data from the Data Logger included		Yes ❑ No ❑	
2	Graph of the temperature distribution during the SIP phase		Yes ❑ No ❑	
3	Graph of the pressure during the SIP phase		Yes ❑ No ❑	
4	F_0 calculation, Temperature/Pressure range and Saturated Steam Pressure verifications tables completed for each trial.		Yes ❑ No ❑	
5	Biological Indicator test results attached		Yes ❑ No ❑	
6	VAL-225 (vessels), (lines), (manifold) completed and attached		Yes ❑ No ❑	
7	Deviation events encountered for the trial		Yes ❑ No ❑	
	If yes, enter Deviation Report numbers	Dev. No.(s)_____	Yes ❑ N/A ❑	
8	Validation Status of this Trial	Valid ❑ Invalid ❑	Yes ❑ No ❑	

F0 Calculations and Saturation Conditions Review Table Completed (as per VAL-225, this SOP)	Name	Sign/Date
Validation Engineer/ Validation Supervisor (circle)		
Review Table File Name/Type and Location:		
F0 Calculations and Saturation Conditions Review Table Reviewed By:	**Name**	**Sign/Date**
Validation Engineer / Validation Supervisor (circle)		

VAL-225 Procedure for Performing Steam in Place (SIP) Validation

Appendix L: Biological Indicator Test Results Sheet – Spore Strips

Project No		**Equipment No**	

Procedure

Fill out table and transfer sheet to Quality Control with all samples.

Cycle/Test Number:		Run #:		Initials/Date:	
QC Serial Number:					
Commenced Incubation at	°C	Time:		Initials/Date:	

1. All testing must be performed in a biological safety cabinet
2. On Return to the QC Lab BI's will be stored at room temperature and must be tested within 7 days from the end of the sterilisation process
3. Aseptically open glassine envelopes and withdraw spore strips with sterile forceps
4. Transfer spore strips to individual tubes containing 10 – 15mLs of sterile Trypticase Soy Broth (TSB)
5. Each tube must be clearly labelled with date and BI number.
6. Incubate Spore strips for seven days at 55ºC - 60 ºC.
7. Observe tubes daily for growth and record the results on Table # 1.

Acceptance Criteria

Turbid = growth = non-sterile

Clear = no growth = sterile

Table # 1 Test Results for Spore Strips								
BI No.	**Received by Date**	**Results**						
		1	**2**	**3**	**4**	**5**	**6**	**7**
Control								
Sign & Date								
Test Result (Pass / Fail)				Tested By / Date				
Verified By / Date				Review By / Date				

VAL-225 Procedure for Performing Steam in Place (SIP) Validation

Appendix M: Biological Indicator Test Results Sheet – Glass Ampoules

Procedure

Fill out table and transfer sheet to Quality Control with all samples.

Cycle Number:		Run #:		Initials/Date:	
QC Serial Number:					
Commenced Incubation at	°C	Time:		Initials/Date:	

1. Place the ampoules in the incubator rack and incubate immediately for 48h at (60 ± 2)°C.
2. Record the examining time and results in the table below.

Acceptance Criteria - Geobacillus stearothermophilus

- **Vibrant Yellow colour** indicates bacterial growth.
- **Clear Purple, Violet, Brown or Bourbon colour** indicates adequate sterilisation.

Vibrant Yellow

Purple

Violet

Brown or Bourbon Colour

Table 1. Test Results for Indicators				
Position	**Op. Init.**	**Date**	**Biological Indicator Result** **Purple, Violet, Brown or Bourbon = –** **Vibrant Yellow = +**	**Sign/Date**
Control				
Test Result: ☐ **Pass** ☐ **Fail**				
Comment:				
Tested by/Date		**Verified by/Date**		
Review by/Date				

Table 2. Test Results for Indicators				
Position	Op. Init.	Date	Biological Indicator Result Purple, Violet, Brown or Bourbon = – Vibrant Yellow = +	Sign/Date
Control				
Test Result: ☐ Pass ☐ Fail				
Comment:				
Tested by/Date		Verified by/Date		
Review by/Date				

VAL-225 Procedure for Performing Steam in Place (SIP) Validation

Appendix N: Biological Indicator Test Results Sheet

Project No		Equipment No	

Procedure

Fill out table and transfer sheet to Quality Control with all samples.

Cycle Number:		Run #:		Initials/Date:	
QC Serial Number:					
Commenced Incubation at	°C	Time:		Initials/Date:	

3. To activate the media, place the indicator in an upright position in a plastic crusher. Gently squeeze the crusher to break the glass ampoule. Place the activated indicator in the incubator rack and incubate immediately.
4. Examine the indicator for any colour change at 24h. Record the examining time and results in the table.

Acceptance Criteria - *Geobacillus stearothermophilus*

- Yellow colour indicates bacterial growth.
- No colour change indicates adequate sterilisation.

Position	Op. Init.	Date/Time	Biological Indicator Purple = - Yellow = +	Initial/Date
			24h	
Control				
Operator Initial/Date				
Test Result: ☐ Pass ☐ Fail				
Comment:				
Tested By/Date				
Verified By/Date				

Appendix O: Condition Release Form

Protocol Number:				CFR No:	
Protocol Title:					
Manufacturer:					
Model Number:			Serial Number:		
Equipment Number:			Location:		

Statement

All of the qualification testing and verification is completed and related data has been reviewed and deemed acceptable. Therefore, the (System Name) is released for use by (Department Name).

Conditional Release Date: _____

Originator:				Date:	
	(Title)	(Printed Name)	(Signature)		
Approved by::	Validation			Date:	
	(Title)	(Printed Name)	(Signature)		
				Date:	
	(System Owner)	(Printed Name)	(Signature)		
	Snr Manager - QO			Date:	
	(Title)	(Printed Name)	(Signature)		

Appendix P: Calibration Verification Record

Project ID: _____

Datalogger ID: _____ Permitted error: _____

Calibrator detail: _____ Record Date / Time _____

Calibration Range | Lower calibration temp. set point (ºC): _____ | Upper calibration temp. set point (ºC): _____

Pre-use Verification: ❑ Post-use Verification: ❑

Thermocouple Channel/Number	Acceptance Criteria	Temperature Verification Set Point (ºC)	Actual Temperature (ºC)	Pass/ Fail

Operator initial: _____ Date: _____

Comments / _____

Deviation #: _____

Page: ___ / ___