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| **Gas and Vacuum System Handling during Cryomodule Plasma Processing**  |
| **Document Number:** | <SRF-PR-WC-COMP-ACTION> | **Effective Date:** | DD Mmm YYYY |
| **Revision Number:** | <1, 2, 3> | **Periodic Review Date:** | DD Mmm YYYY |
| **Document Owner:** | <First Last Name> | **Department Owner:** | SRF Operations |

# Purpose and Scope

The purpose of this document is to <enter text>.

This procedure applies to <enter text>.

This procedure does not apply to <enter text>.

# Definitions and Diagrams

The following terms have specific meanings within this procedure.

|  |  |
| --- | --- |
| **Term** | **Definition** |
| <Term 1> | <Definition> |
| <Term 2> | <Definition> |
|  |  |

# Roles and Responsibilities

The following roles have responsibilities described in this document.

|  |  |
| --- | --- |
| **Role** | **Responsibility** |
| <Job Title> | <Very short summary of activities this job title performs in this procedure.> |
|  |  |

# Safety

The following safety items …

# Procedure

Level 1 text.

Start up after manifold connected-Day 1

Capacitance manometers should be on for at least one hour before trusting them.

### Pump down the vacuum manifold

#### Verify that the vacuum cart has been backfilled and the right-angle valves on the ion pumps are closed.

#### On the turbo cart, open the 1-1/2” right angle valves VPB1, VPA1 and RGA valve VPA7.

#### Turn on the scroll pumps and wait until the pressure on each controller indicates less than 0.02 Torr.

#### Check for the gross leaks in the vacuum manifold.

##### Close the valves VPB1, VPB2, VPA1 and VPA2.

##### Observe the pressure on the vacuum manifold combo gauge and if the pressure increases, contact vacuum support. (Add good pressure numbers) to read)

#### Check for gross leaks in the turbo manifolds (on turbo cart???)

##### Turn off each scroll pump.

##### Observe the pressure on the turbo manifolds and if the pressure increases, contact vacuum support.

#### If there is no leak, open VPA1 and VPB1.

#### Turn the scroll pumps back on and wait for the pressure on each controller indicates less than 0.02 Torr.

#### Turn on the two turbo pumps and watch them spin up. The pressure should quickly go below 1E-5 Torr.

#### Turn on the RGA.

##### Stop the plasma main program.

##### In the bottom tab control instrument setup tab, click on the RGA tab.

##### Go to the top of the screen and select the RGA tab.

##### Insure that the CEM (Electron multiplier) is off.

##### Start running plasma main program to start RGA. RGA should have filaments on for one hour prior to trusting them.

### Pump down the gas supply manifold

#### Verify the ion pump right angle valve is closed.

#### Verify the V\_Isolation valve is closed, if not close it.

#### Open the cavity gas supply valve, VN2 and pump valve.

#### Monitor the pressure combo gauge, PGX and the manifold capacitance manometer and piezo gauges. The pump out speed on the manifold will be very slow.

#### Wait for the pressure on the manifold to reach 0.1 Torr.

#### Check for a gross leak on the manifold.

##### Close cavity gas supply valve.

##### Watch for the pressure rise on the capacitance manometer. (Numbers???)

#### Check leak on the hose or connection to the gas isolation valve.

##### Close VN2 valve.

##### Check for a pressure rise on VPX and the combo gauge, if the pressure increases, contact vacuum support. (Numbers??)

#### Open VN2 and the cavity isolation valve and leave the system pumping overnight.

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| Figure 01: Valve configuration of gas supply and pumping system showing steps for 5.1 Start up after manifold connected-Day 1 |

* Level 2 Bullet
* Level 2 Bullet
* Level 2 Bullet

Start up after manifold connected-Day 2

Level 2 text.

1. Numbered list
2. Numbered list
3. Numbered list

## Transition from overnight to processing

Level 3 text.

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	+ Level 3 Bullet
	+ Level 3 Bullet
1. Level 3 Numbered

Level 3 Numbered

Level 3 Numbered

## Transition from processing to overnight

Level 4 text.

* Level 4 Bullet
* Level 4 Bullet
* Level 4 Bullet

## Restore system after processing – Day 1

Level 5 text.

* Level 5 bullet
* Level 5 bullet
* Level 5 bullet
1. Level 5 Numbered
2. Level 5 Numbered
3. Level 5 Numbered

## Restore system after processing – Day 2

Level 3 text.

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	+ Level 3 Bullet
	+ Level 3 Bullet

# References

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| --- | --- |
| **Document No.** | **Title** |
| SRF-06-PR-001 | Records Management Procedure |
| SRF-07-PR-001  | Document Management Procedure |
| <Doc Id> | <Document Title> |

# Release and Revision History

|  |  |  |
| --- | --- | --- |
| **Rev #** | **Major Changes** | **Revision Date:** |
| 1 | Initial version (Utilizing SRF-07-FM-005 SRF OPS Procedure Template, R1) | DD Mmm YYY |
| <2> | <brief description of major changes>(Utilizing SRF-07-FM-005 SRF OPS Procedure Template, R1) | DD Mmm YYY |
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# Approvals

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| --- | --- |
| **Approved by:** | **Name:** |
| Document Owner | <First Last Name> |
| Document Reviewer 1JLab SME or SRFOPS WCL | <First Last Name> |
| Document Approver 2SRFOPS WCL or GL | <First Last Name> |

For Project Procedures: Refer to the Project Execution Procedure SRF-11-PR-001

*Document Processor Instructions:*

* *Put valid dates everywhere DD is found and verify they are accurate*
* *Attach DocuShare Approval Picture here*

**\*\*\* Form Approval Page. To be deleted when creating your procedure. \*\*\***

# Form Release and Revision History

|  |
| --- |
| **SRF OPS Procedure Template** |
| **Document Number:** | SRF-07-FM-005 | **Effective Date:** | 02 Apr 2025 |
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| **Document Owner:** | Valerie Bookwalter | **Department Owner:** | SRF Operations |

|  |  |  |
| --- | --- | --- |
| **Rev #** | **Major Changes** | **Revision Date:** |
| 1 | Initial version; Adapted from SRF-07-FM-002 QMS Process Procedure Template R3 | 27 Mar 2025 |
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# Form Approvals

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| --- | --- |
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| Quality Representative | Ashley Mitchell |
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