Aphena

Installation/Operational Qualification

For the

New Blending Suite in Building 1

at

Aphena Pharma Solutions, Easton, MD

Protocol Number: IQOQ2020-020

Revision: 0

Date: 09/14/2020

Protocol Approvals

This Installation/Operational Qualification protocol (IQOQ2020-020 Rev 0) has been written to challenge the proper installation and capabilities of the New Blending Suite, B7, in Building 1 at Aphena Pharma Solutions, Easton. The IQOQ has been read and approved for execution by the signatories below:

Prepared By	Name / Title	Signature	Date
Technical Services	Neftali Perez Technical Services Consultant	/s/ Neftali Perez/s/	9/25/20
Approvals Pre-Execution	**Name / Title**	**Signature**	**Date**
Technical Services	Rafeh Raza Sr. Technical Services Specialist	/s/ Rafeh Raza/s/	9/25/20
Engineering	Chandler Hardin Sr. Project Engineer	/s/ Chandler Hardin/s/	9/26/20
Engineering	Elie Talej Director of Engineering	/s/Garrett Sterling/s/ for Elie Talej	9/30/20
Operations	Kelly Hovius Director of Operations	/s/ Kelly Hovius/s/	9/25/20
Operations	Jerry Pappas Blending Supervisor	/s/ Jerry Pappas/s/	9/25/20
Laboratory Microbiological	Julie Curie Microbiology Supervisor	/s/ Julie Curie/s/	9/25/20
Quality & Regulatory Affairs	Sanjay Nimkar Director of Quality and Regulatory Affairs	/s/ Sanjay Nimkar/s/	9/30/20

Revision History

Revision	Date	Reason for Change	Person Completing Change
0	09/14/2020	N/A – Original Protocol DCC20-020 CC – 029	N/A

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1. Purpose

To provide documented evidence and ensure that the New Blending Suite, B7, located in Building 1 has been supplied, installed and operates in accordance with the manufacturer's criteria and applicable cGMPs. The qualification of the New Blending Suite will ensure that the system has been properly constructed and operates in accordance with Aphena Pharma Solutions specifications. This protocol provides baseline installation and operational data to serve as a reference for change control in the future.

The protocol will define the objectives and acceptance criteria required to complete the qualification campaigns and provide the methodology by which these tests shall be conducted.

2. Scope

This protocol applies to the New Blending Suite, B7, at the Aphena Pharma Solutions Manufacturing Facility in 7978 Industrial Park Road, Easton, Maryland. This qualification effort will include the confirmation of proper equipment installation and the testing of the controls and operating parameters of the Blending suite. The IQ/OQ protocol performs the following two functions: it provides Aphena Pharma Solutions with a baseline installation of the Blending Suite and it assures that the suite operates according to the processing requirements which have been established via Aphena Pharma Solutions specifications.

Revalidation requirements will be required for any future system changes depending on the scope and the evaluation performed through change control.

3. Background

This is the original qualification of the New Blending Suite (B7) in Building 1.

4. System Description

The Aphena Pharma Solutions facilities is a building campus manufacturing facility, located in Easton, Maryland. The temperature/Humidity-controlled Blending Suite sits on the South/West side of the building 1. The area of the Blending Suite is 1535 square feet. There are three (3) blending areas and a Motor Control Center (MCC). The blending areas are identified as; T1 (B25, 100-gallons), T2 (B24, 1000-gallons), and T3 (B26, 1000-gallons), which are used to blend materials. The heating ventilation and air conditioning system (HVAC), AC-1, AC-2, AC-3 and their correspondently air handling units, AHU-A1, AHU-A2 and AHU-3A are supplied by TRANE.

5. Responsibilities

- **Technical Services**
  - Technical Services shall prepare the protocol and final report
  - Execute this protocol with assistance from other departments, as appropriate
  - Provide support to Engineering, as needed, during the execution of the protocol
- **Operations and Engineering**
  - Review and approval of the protocol and final report
  - Provide support to Technical Services, as needed, during the execution of the protocol

- **Quality Department**
  - Review and approval of protocol and final report
  - Performs all required testing during the protocol execution
  - Review and approve action plans (if applicable) for addressing deviations

6. References

- U.S. Code of Federal Regulations, Current Good Manufacturing Practice for Finished Pharmaceuticals, (21 CFR 211)
- VP2011-04 Facilities and Utilities Validation Plan
- LC 009 Environmental Monitoring
- WILAB5, Environmental Monitoring: Kanomax Handheld Laser Particle Counter
- WILAB32, Operation and Calibration of the RCS Air Sampler

7. Deviations and Observations

Any deviations to the requirements specified in this IQOQ protocol will be documented and investigated using the Deviation Report Form provided in **Attachment 3**. This form will be completed by appropriate technical associates, signed by a Quality associate, and attached to the final report. Any additional observations during the execution of this protocol that do not meet deviation criteria may be documented in additional comments within the final report.

8. Acceptance Criteria

Qualification shall be considered completed upon:

- Adequate collection of data and documented accordingly in provided tables presented within the protocol.
- Investigation and successful resolution of any observations encountered.
- The completion of the protocol report with the proper signatures.

9. Documentation

Documentation shall conform to cGMP practices. All entries must be initialed and dated. All entries must be in ink, blue or black permitted, suitable for photocopying. All blank spaces will be filled in with N/A (Not Available) or N/A (Not Applicable). Unused sections will be lined out, initialed and dated.

All results must be within the established acceptance criteria specified in each test case or verification. If a result does not meet the acceptance criteria, the failing data must be included in the results and a deviation report must be generated.

The "Comments" section included at the end of each test form may be used to describe any additional information found in the field verification pertaining of the test execution.

A copy of any executed Attachments from the protocol, or copies of any deviations or OOS/OOT reports generated during the execution of the protocol, will be included in the appropriate Interim or Final Report.

10. Procedure

10.1 General Procedure

10.1.1. Signature Identification Log

Each individual (documenting results and/or initializing any page or section) that participates in the IQ/OQ protocol execution (including Reviewed By individual(s)) shall enter their printed name, signature, initials, and department on the Signature Identification Log in **Attachment 1**, Signature Identification Log.

10.1.2. Training Log

It is the responsibility of the persons performing operations associated with this protocol to have read and understood this document and understand their job specific functions prior to the protocol being executed. Use **Attachment 2**, Training Log, to document this information.

10.1.3. Protocol Deviation Report Form

During the execution of the IQ/OQ protocol log any deviation that occurs in **Attachment 3**, Protocol Deviation Report Form, to report the investigation and resolution of all deviations.

10.1.4. Safety Inspection

Use **Attachment 4** to document that a "Safety Inspection" was conducted and is approved. The objective of this review is to verify that that the Blending Suite B7 complies with Aphena safcty guidelines.

10.1.5. Test Instrument Log

Use **Attachment 5** to document the calibration for all calibrated test instruments that are used for the execution of this IQ/OQ protocol.

10.1.6. Supplemental Documentation Log

Use **Attachment 6** to document all supplemental documentation identified during the IQ/OQ to support the execution.

10.2 Installation Qualification

10.2.1. Document Verification

Use **Attachment 7** to document equipment manuals, submittals, and technical literature received from vendors for major components for the operation and maintenance of the New Blending Suite. The documents should include operation and maintenance instructions.

10.2.2. Major Components Verification

Use **Attachment 8** to verify that the major components are installed per the manufacturer's specifications. Verification can either be performed visually or using vendor documentation.

This verification shall be acceptable if major components are as identified and installed in accordance with manufacturer's specifications, design criteria, safety features, and other Aphena Pharma Solutions requirements.

10.2.3. Installation Verification

Use **Attachment 9** to verify that the configuration and general installation conditions of the New Blending Suite meet all design requirements. Verification can either be performed visually or using vendor documentation.

This verification shall be acceptable if the New Blending Suite configuration and general installation conditions meet the specified requirements.

10.2.4. Drawing Verification

Use **Attachment 10** to document that the New Blending Suite drawings are redlined and field verified to match the "As Built" condition. Include any additional drawings if applicable. Identify documents on the Supplemental Documentation Log **Attachment 6**.

This verification shall be acceptable if the equipment/system drawings are verified to meet the current field conditions.

10.2.5. Material of construction Verification

Use **Attachment 11** to verify that the materials of construction of the New Blending Suite components meet Aphena requirements. If the information regarding a required parameter is not directly available via visual inspection, the data may be obtained from the component submittals or similar documentation. Identify documents on the Supplemental Documentation Log **Attachment 6**.

This section shall be acceptable if the materials of construction are documented in **Attachment 11** and meet the manufacturer's specifications, design criteria, safety features, and other Aphena requirements.

10.2.6. Utility Verification

Use **Attachment 12** to verify that the New Blending Suite has the required supporting utilities for operation. Ensure that utilities are properly connected and identified via labels. If the information regarding a required parameter is not directly available via visual inspection, the data may be obtained from the component submittals or similar documentation. Identify documents on the Supplemental Documentation Log **Attachment 6**.

10.2.7. Instrument Calibration Verification

Use **Attachment 13** to verify that New Blending Suite critical instruments are assigned unique identifier, have the correct accuracy and range for their intended use, are calibrated, and are incorporated into the Aphena calibration program. Additionally, verify that all non-critical instruments that don't require calibration are identified and labeled.

This verification shall be acceptable if all new instruments are documented in **Attachment 13** and calibration certificates for critical instruments are available. Non-critical instruments not requiring calibration are identified and labeled.

10.2.8. Standard Operation Procedures (SOP) Verification

Use **Attachment 14** to verify that New Blending Suite operation and maintenance SOPs are generated. A complete draft of the SOP may be used to meet the requirements for this protocol as long as Aphena SOP number is assigned to it.

This verification shall be considered acceptable if the New Blending Suite Operation and Maintenance SOPs are documented in **Attachment 14**, are generated in at least draft form, and have Aphena SOP number assigned.

10.2.9. Spare Parts List Verification

Use **Attachment 15** to verify that a spare parts list is available and that recommended spare parts are identified for the New Blending Suite components. Identify documents on the Supplemental Documentation Log **Attachment 6**.

This section shall be acceptable if the spare parts list for the New Blending Suite components is documented in **Attachment 15**, is available, and recommended spare parts are identified.

10.3 Operational Qualification

10.3.1. Parameters Verification

Use **Attachment 16** to document New Blending Suite HVAC units' parameters. Utilize equipment printouts where available.

This section shall be acceptable if all equipment parameters are documented.

10.3.2. Functional Verification

Use **Attachment 17** to verify the operation of the control systems for all applicable equipment and to verify the equipment responds correctly to modified conditions.

This verification shall be acceptable if all specified equipment responds correctly to modified conditions as specified.

10.3.3. Disaster Recovery and Power Failure Verification

Use **Attachment 18** to verify the recovery to normal operations of each piece of equipment and the entire system after a power failure.

This verification shall be acceptable if all equipment returns to normal operation after experiencing a loss in power.

10.3.4. System Air Balance Verification

Use Attachment 19 to verify that an Environmental Monitoring exercise has been conducted in the New Blending Suite.

This verification shall be acceptable if the system Air Balance findings complies with all design requirements and the report is approved.

10.3.5. System Monitoring

Use **Attachment 20** to verify that an Environmental Monitoring exercise has been conducted in the New Blending Suite.

This verification shall be acceptable if the system meets all **attachment 20** Aphena operating requirements as per SOP LC 009 without any critical deviation.

10.3.6. Execution Checklist

Use **Attachment 21** to verify that all the requirements of this Installation and Operational Qualification Protocol have been completed and the appropriate data forms have been reviewed.

11. Attachments

A. General Procedure

Attachment 1: Signature Identification Log
Attachment 2: Training Log
Attachment 3: Protocol Deviation Report Form
Attachment 4: Safety Inspection
Attachment 5: Test Instrument Log
Attachment 6 Supplemental Documentation Log

B. Installation Qualification

Attachment 7: Document Verification
Attachment 8: Major Components Verification
Attachment 9: Installation Verification
Attachment 10: Drawing Verification
Attachment 11: Material of Construction Verification
Attachment 12: Utility Verification
Attachment 13: Instrument Calibration Verification
Attachment 14: Standard Operation Procedures Verification
Attachment 15: Spare Parts List Verification

C. Operational Qualification

Attachment 16: Parameters Verification
Attachment 17: Functional Verification
Attachment 18: Disaster Recovery and Power Failure Verification
Attachment 19: System Air Balance Verification
Attachment 20: System Monitoring
Attachment 21: Execution Checklist