Deviation and CAPA Report

Meridian Biologics — Nashport Manufacturing Facility

Quality Assurance — Investigation & Corrective Action Record

Deviation ID:	DEV-2026-0143	**Classification:**	**Major**
Date Opened:	14 June 2026	**Target Closure:**	15 August 2026
Product:	NimBlend rHu-Insulin Analog, 10 mL MDV	**Batch/Lot:**	MB-INS-2451-07
Process Step:	Sterile Filtration & Filling, Suite 3	**Investigation Lead:**	Priya Nakamura, QA
Site SOP Reference:	SOP-QA-014 (Deviation Management)	**Reported By:**	Elena Cho, QC Microbiology

1 Deviation Description

On 14 June 2026 at 06:40, QC Microbiologist Elena Cho identified a viable particle excursion during routine non-viable and viable environmental monitoring of the Grade C corridor adjacent to Filling Suite 3. The settle plate exposed at sampling location EM-C-07 returned 14 CFU, exceeding the SOP-QA-014 action limit of 10 CFU for a Grade C in-operation location. The excursion was detected during the sterile filtration and filling of Batch MB-INS-2451-07 (NimBlend rHu-Insulin Analog, 10 mL multi-dose vial presentation), which was in progress in the adjoining Suite 3 at the time of sampling.

The differential pressure (DP) gauge for the corridor anteroom was subsequently found reading 2 Pa below the SOP-mandated cascade minimum of 10 Pa relative to the Grade D corridor outside it, indicating a loss of directional airflow that could permit ingress of lower-grade air. Manufacturing Supervisor Marcus Webb confirmed that the anteroom door had been held open with a cart during a gowned material transfer approximately 25 minutes before the excursion was recorded.

1.1 Immediate Actions Taken

- Filling operations in Suite 3 were placed on hold at 07:05 pending investigation.
- Batch MB-INS-2451-07 was quarantined; all filled units were segregated and identified with hold labels per SOP-QA-014 Section 6.2.
- Repeat environmental monitoring was performed at EM-C-07 and four surrounding locations at 07:30; all results returned within limits.
- Facilities Engineering was dispatched to inspect and recalibrate DP sensor DP-114 the same day.
- A cross-functional investigation team was convened within four hours per the Major-classification timeline in SOP-QA-014.

1.2 Scope and Impact Assessment

The two batches processed immediately before and after MB-INS-2451-07 in Suite 3 (MB-INS-2451-06 and MB-INS-2451-08) were reviewed for the same monitoring location and showed no excursions. Sterility and endotoxin testing on MB-INS-2451-07 retained samples returned conforming results (see Section 4). No other product lines share the affected corridor.

⚠ Initial Risk Statement. Product impact to Batch MB-INS-2451-07 cannot be excluded solely on the basis of environmental data; sterility assurance is confirmed independently through the release testing referenced in Section 4. This deviation remains open pending completion of all CAPA items below.

2 Root Cause Analysis

The investigation team (Priya Nakamura, QA; Marcus Webb, Manufacturing; Elena Cho, QC Microbiology; and Dr. Samuel Okafor, Site Quality Director) applied a structured 6M Ishikawa analysis to enumerate candidate contributing factors, followed by a 5-Whys drill-down on the branch judged most probable by convergence of physical evidence.

2.1 Ishikawa (6M) Diagram

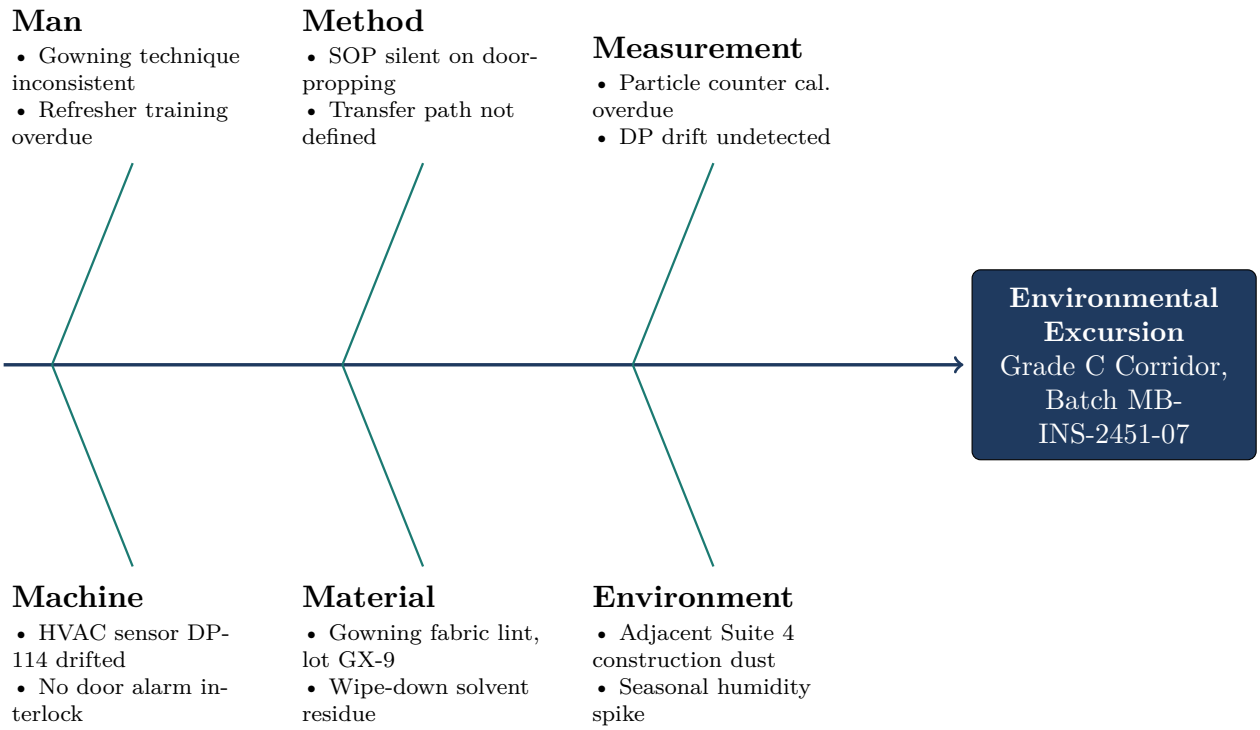

Figure 1: Ishikawa (6M) diagram enumerating candidate causes for the Grade C corridor environmental excursion during Batch MB-INS-2451-07.

2.2 Five Whys — Primary Contributing Branch

Physical evidence (the out-of-cascade DP reading, the door-propping observation, and the sensor's calibration record) converged on the Machine/Measurement branches. The team drilled down as follows:

Question	Finding
Why 1	Viable particle count at EM-C-07 exceeded the Grade C action limit.
Why 2	Directional airflow cascade into the corridor anteroom had collapsed to 2 Pa below the 10 Pa SOP minimum.
Why 3	DP sensor DP-114 had drifted out of tolerance and was no longer reporting an accurate cascade reading.
Why 4	DP-114's scheduled calibration, due 28 April 2026, had not been performed; the sensor was 47 days overdue at the time of the excursion.
Why 5	The site metrology calendar treats corridor-level utility sensors as non-critical instruments reviewed only on annual audit, so overdue calibrations on this asset class do not generate an automated alert.

2.3 Root Cause Statement

Root cause: The Grade C corridor differential-pressure sensor (DP-114) drifted undetected because the site's metrology scheduling system does not flag overdue calibrations for corridor-level utility instrumentation. This allowed a gradual loss of airflow cascade to go unnoticed until a transient door-opening event during material transfer permitted sufficient lower-grade air ingress to produce a viable particle excursion.

3 Corrective and Preventive Actions (CAPA)

Actions were assigned against the root cause and each contributing branch identified in Section 2, prioritised by risk to product and recurrence likelihood in accordance with the site's risk-based CAPA prioritisation practice [International Council for Harmonisation, 2015, Pharmaceutical Inspection Co-operation Scheme, 2022].

ID	Action Description	Type	Owner	Due Date	Status
CAPA-1	Recalibrate and functionally verify HVAC differential-pressure sensor DP-114; replace transmitter if drift recurs on verification.	Corrective	Tom Reyes Facilities Eng.	28 Jun 2026	**Closed**
CAPA-2	Install a door-held-open alarm interlock on all Grade C anteroom doors, with local audible alert and BMS event log.	Preventive	Tom Reyes Facilities Eng.	15 Jul 2026	**In Progress**
CAPA-3	Retrain all Grade C-qualified personnel on gowning technique and material transfer practice per SOP-MFG-221, with practical assessment.	Corrective	Priya Nakamura QA Training	30 Jun 2026	**Closed**
CAPA-4	Reduce the calibration interval for corridor-level DP and particle-counting instrumentation from 12 to 6 months in the metrology master schedule.	Preventive	Grace Lin Metrology	10 Jul 2026	**In Progress**
CAPA-5	Revise SOP-MFG-221 to explicitly prohibit propping open Grade C anteroom doors and add floor-marked transfer routing to avoid the practice.	Preventive	Rahul Advani QA Doc. Control	01 Aug 2026	**Open**

3.1 Interim Controls

Pending closure of CAPA-2 and CAPA-4, the corridor anteroom door is monitored by an additional twice-daily manual DP spot-check logged on Form QA-014f, and material transfer through the anteroom is escorted by a gowning monitor per an interim instruction issued under change control CH-2026-0871.

4 Effectiveness Verification

Effectiveness of CAPA-1 and CAPA-3 was assessed against environmental monitoring and DP trend data from the three batches processed through Suite 3 after implementation. CAPA-2, CAPA-4, and CAPA-5 remain open and will be verified against the same criteria once implemented; this report will be updated with a supplemental effectiveness check at their closure per SOP-QA-014 Section 8.

Batch	EM-C-07 (CFU)	DP Reading (Pa)	Result
MB-INS-2451-08	3	11.4	Conforms
MB-INS-2451-09	2	11.1	Conforms
MB-INS-2451-10	4	10.8	Conforms

Verification conclusion. DP readings across the three post-CAPA batches remained within the 10 Pa cascade minimum required by SOP-QA-014, and viable particle counts at EM-C-07 stayed well below the 10 CFU action limit, consistent with sustained corrective effect. A 90-day gowning compliance re-audit is scheduled for 30 Sep 2026 to confirm durability of the CAPA-3 retraining.

Release testing on Batch MB-INS-2451-07 (sterility per USP ⟨71⟩ and endotoxin per USP ⟨85⟩) returned conforming results on 21 June 2026, confirming no product impact from the excursion described in Section 1.

5 Approval and Sign-Off

Role	Name	Signature	Date
Investigator	Elena Cho	_____	_____
QA Reviewer	Priya Nakamura	_____	_____
Manufacturing Head	Marcus Webb	_____	_____
Site Quality Director	Dr. Samuel Okafor	_____	_____

Retention Notice. This record is retained per SOP-QA-014 and U.S. Food and Drug Administration [2023] for the lifetime of the product plus five years, and is subject to inspection under U.S. Food and Drug Administration [2006] and the site's International Organization for Standardization [2015]-aligned quality management system.

References

International Council for Harmonisation. Ich q10: Pharmaceutical quality system, 2015. Step 4 version, incorporated into 21 CFR and EU GMP Annex frameworks.

International Organization for Standardization. Iso 9001:2015 — quality management systems — requirements, 2015.

Pharmaceutical Inspection Co-operation Scheme. Pic/s guide to good manufacturing practice for medicinal products, PE 009, 2022.

U.S. Food and Drug Administration. Guidance for industry: Investigating out-of-specification (OOS) test results for pharmaceutical production, 2006.

U.S. Food and Drug Administration. Code of federal regulations title 21 part 211: Current good manufacturing practice for finished pharmaceuticals. 21 CFR §211, 2023.