Historical Pattern Comparison — 2024 vs 2026 Temperature Events

AMGEN — DEVIATION TREND INTELLIGENCE

Historical Pattern Analysis

Generated by: Pace AI Agent

Date: 2026-02-18

PATTERN MATCH: 87% SIMILARITY

2024 SEQUENCE (NC-ATO-2024-0156 precursor):

Week 1: NC-ATO-2024-0089 — Temp +0.3C, BR-030-001 (Minor)

Week 3: NC-ATO-2024-0102 — Temp +0.5C, BR-030-001 (Minor)

Week 5: NC-ATO-2024-0134 — Temp +0.7C, BR-030-001 (Minor)

Week 7: NC-ATO-2024-0148 — Temp +1.0C, BR-030-001 (Minor)

Week 8: NC-ATO-2024-0156 — Temp +2.3C, 4.5 hours. BATCH FAILURE. $12M loss.

Root cause (2024): Thermocouple degradation after improper maintenance.

2026 CURRENT SEQUENCE:

Week 1: NC-ATO-2026-0847 — Temp +0.5C, BR-030-003 (Minor)

Week 3: NC-ATO-2026-0873 — Temp +0.6C, BR-030-003 (Minor)

Week 6: NC-ATO-2026-0915 — Temp +0.8C, BR-030-003 (Minor)

SIMILARITIES

• Both: Gradual escalation of temperature drift magnitude

• Both: Same equipment class (BR-030 series bioreactors)

• Both: Thermocouple response degradation confirmed by PI/OSIsoft data

• Both: Onset correlates with maintenance event

DIFFERENCES

• 2024: Regular maintenance technician, 4 NCs before failure

• 2026: CONTRACT technician (non-standard procedure), detected at 3 NCs

• 2026 detection is EARLIER in the failure progression

RISK ASSESSMENT

Without intervention, projected next event: +1.0-1.2C within 2-3 weeks.

Batch failure probability if uncorrected: 65-80% based on 2024 precedent.