Respond to a signal with a defined owner

Construct an evidence-based suspect boundary, reconcile affected locations, and distinguish restoration, verification and authorized release.

The first boundary is a starting point

Fictional training case: at a machining cell the check on serial 140 fails. Serial 100 is the last verified acceptable checkpoint in the supplied record. Team leader Jules follows the local reaction plan and must locate potentially affected output before the next move. The precise technical fault is not supplied.

Your role and the reference condition

Team leader coordinating quality, downstream supervision and the authorized process specialist.
Normal: The checkpoint record is traceable to the correct characteristic, method and serial. Potentially affected output remains identifiable until disposition.
Gap: The cell has only 15 suspect pieces beside it, while 25 have already moved downstream or to packing. Someone proposes holding only the visible pieces.

Work within these conditions

1. The initial interval assumes serial order represents production order and the serial 100 checkpoint is trustworthy.

2. A passing restart check does not itself authorize release of earlier output; the applicable reaction/disposition plan controls that decision.

Fictional teaching case. Supplied observations support the exercise; proposed actions are not verified customer results.

See how the method works

A signal is useful only when the response is clear. An out-of-control action plan identifies who recognizes the abnormality, who contains potentially affected output, how evidence is preserved and who can authorize restoration. Start with a justified suspect boundary, then examine downstream stock, rework and other exposure that may extend it. Do not confuse quarantining product with correcting the underlying process. Investigate using time, settings and lot identity, implement an authorized action and verify that the process and product are suitable before release. Update the control plan when learning changes the required response. The boundary here is an arithmetic illustration, not a universal containment rule.

Method exhibit: Recognize signal, Define suspect boundary, Contain exposure, Investigate + restore, Verify + authorize.

Follow the evidence and decisions

Inspect the supplied case inputs

Supplied record	Evidence
Last verified acceptable	Serial 100
Failed check	Serial 140; response initiated
At cell / WIP	126-140:15 units
Downstream queue	111-125:15 units
Packed, not shipped	101-110:10 units
Total initial interval	101-140 inclusive:40 unique units

01 / Secure the event record

Jules records the failed characteristic, serial 140, time, measurement reference and reaction-plan owner. He initiates the prescribed local response and retains the checkpoint evidence.

Why: A vague note saying bad batch cannot anchor an exposure investigation. Immediate action and later cause investigation need a common event identity.

Evidence / check: An OCAP event record links the failure to serial 140 and the last verified checkpoint 100.

02 / Declare an initial interval

He marks 101-140 as potentially affected:140 minus 101 plus 1 equals 40 serials. He labels this initial, pending trace and checkpoint validation.

Why: Inclusive counting prevents an off-by-one omission. The last good sample is a boundary hypothesis based on the supplied trace, not proof that every intervening unit passed.

Evidence / check: The map shows 100 as a checkpoint and 101-140 as the initial suspect interval.

03 / Follow the output, not the aisle

He asks downstream and packing owners to identify and control their listed ranges. The three location records reconcile 15 +15 +10 to 40 unique units.

Why: Product can travel beyond the machine before a signal appears. A hold covering only the pieces in sight misses exposure.

Evidence / check: Each range has a receiving owner and hold acknowledgment; none is double-counted.

04 / Check whether the boundary must expand

Quality checks WIP, rework, alternate routing and any uncertainty in the checkpoint or serial sequence. Unlocated or potentially shipped items trigger the applicable escalation.

Why: The initial arithmetic cannot settle a broken trace. An unresolved item stays an open issue even if totals on a spreadsheet happen to balance.

Evidence / check: A boundary review states known locations, missing evidence and any revised interval.

05 / Separate recovery from release

The authorized specialist investigates and restores the process under its procedure. Quality verifies the response and decides disposition for affected output through the assigned authority.

Why: The machine running again answers a different question from whether suspect pieces can be used.

Evidence / check: Technical action, verification conditions and product release/disposition are separately referenced; no release is inferred from a restart.

Initial containment reconciliation - fictional event OC14

Scope	Count / location	Owner / decision
101-110	10 packed, not shipped	Packing lead: hold acknowledged
111-125	15 downstream queue	Downstream lead: hold acknowledged
126-140	15 at cell / WIP	Cell lead: hold acknowledged
101-140	40 unique units	Quality: provisional boundary
Release	Pending disposition evidence	Authorized quality decision; not restart alone

The checkpoint cannot be trusted

The measurement-status review finds that the serial 100 check cannot be accepted. The preceding valid checkpoint is serial 80. Records locate 81-100 as 20 additional packed units.

Decision

Expand the initial suspect interval to 81-140:60 units. Add the 20 newly identified units to the controlled scope and reassess downstream exposure.

Reasoning

60 =140 minus 81 plus 1; the previous 40 remain included. The new evidence changes the boundary, not just the label on the old hold.

What would change the decision?

The revised map cites why checkpoint 100 was rejected, retains checkpoint 80 evidence and reconciles all 60 unique serials.

Practise with a changed case

A failed check and one unlocated serial

New fictional event: serial 200 is the last verified acceptable checkpoint and serial 235 fails. Serial 201-210 are packed but not shipped; 211-220 are at downstream inspection; 221-234 are at the cell. Serial 235 was removed for the failing check and its present location is not yet recorded.

Range / checkpoint	Declared status
200	Last verified acceptable
201-210	10 packed
211-220	10 downstream
221-234	14 at cell
235	Failed sample; location unrecorded

Your task

1. Define and count the initial interval.
2. Reconcile located and unlocated units and assign the missing-location follow-up.
3. Explain why a passing restart sample cannot close this event.

Use the next page to record your reasoning before reading the answer.

Your practice worksheet

A failed check and one unlocated serial

Initial interval and assumption

Location / serial range / unique count

Unlocated exposure and receiving owner

Process verification record

Product disposition authority and remaining evidence

Complete your reasoning before turning to the answer. Use the separate learner workbook for group practice.

Check your reasoning and transfer it

1. 201-235 inclusive contains 35 serials. The located ranges contain 10 +10 +14 =34; serial 235 remains one unlocated suspect unit.

2. Hold/control the known ranges and give the missing sample trace to the quality event owner with a receiving person and review time. Do not silently add 235 to the cell count without confirmation.

3. A restart check concerns current process recovery. Complete product scope, verification and authorized disposition remain necessary, including the failed sample location and any further exposure identified.

Suggested completed record

Scope category	Serials / calculation	Count / decision
Initial scope	201-235	35 units
Located	10 +10 +14	34 units
Unlocated	Serial 235	1 unit; trace open
Closure	Not authorized by restart	Reconcile and disposition

Plausible wrong turns

1. The suspect interval is not automatically the entire final containment.

2. A matched total without traceable locations is not a complete reconciliation.

Evidence of a sound answer

1. Count both intervals inclusively and avoid double counting.

2. Keep the missing serial visible and assigned.

3. Distinguish containment, technical recovery and product release.

Take the learning back to work

Commitment	Agreed follow-through
Owner	Named OCAP/quality event owner with each affected location owner
Record	Signal record, suspect-scope map, acknowledgments and disposition references
Review	At each handoff and before any release; timing follows the local reaction plan
Verification evidence	Validated checkpoint, traceable unique units, restoration verification and authorized dispositions
If unresolved	Maintain applicable controls, expand investigation and escalate unlocated or downstream exposure through the defined route.

Help someone else apply the method

Prepare

1. Serial-range cards for cell/downstream/packing
2. Blank exposure and disposition record
3. Separate checkpoint-invalid card for exception

Minutes	Activity and coaching prompt
5	Frame the signal and boundary Why is 100 not counted in 101-140?
7	Move range cards to locations Where are the pieces that have left the cell?
9	Complete the missing-serial practice Which acknowledgment is still absent?
6	Reveal checkpoint change and debrief What evidence could enlarge your initial scope?

Debrief

1. If a learner counts only cell stock, follow one downstream handoff.
2. Ask who can release output and what record supports that authority.

Individual or remote practice

Draw the boundary and locations before counting; compare both the total and the unresolved questions with the answer.

Connect the method and check its boundaries

Before application

1. A defined trigger and responsible role
2. Retained product/time identity

Outside this lesson

1. Universal containment boundaries
2. Automatic release after an adjustment

NIST: Out-of-control response

NIST: Out-of-control response

A signal calls for the process-specific out-of-control action plan and investigation of an assignable cause.

Public primary-source summary; underlying paid standards/forms are not reproduced.

Open this lesson and its visual aids