Trace one suspect lot through split, merge and rework

Trace a suspect lot through both quantity and identity links, including split paths, destinations, WIP and scrap.

Four hundred accounted for is only the first check

Fictional case: input lot L70 contains 400 units and splits into path A250 and path B150. The retained core totals are 300 shipped,80 in work and 20 scrapped. Trace coordinator Luis must identify where suspect material went. A balanced total is available, but one shipment record lacks its destination identity.

Your role and the reference condition

Trace coordinator with warehouse, production and quality owners
Normal: Every transformation or movement preserves source/output identity, quantities, status and destination. Rework links do not create or erase material.
Gap: The team declares the trace complete because 300+80+20=400, even though the recipient of part of the shipped population is unresolved.

Work within these conditions

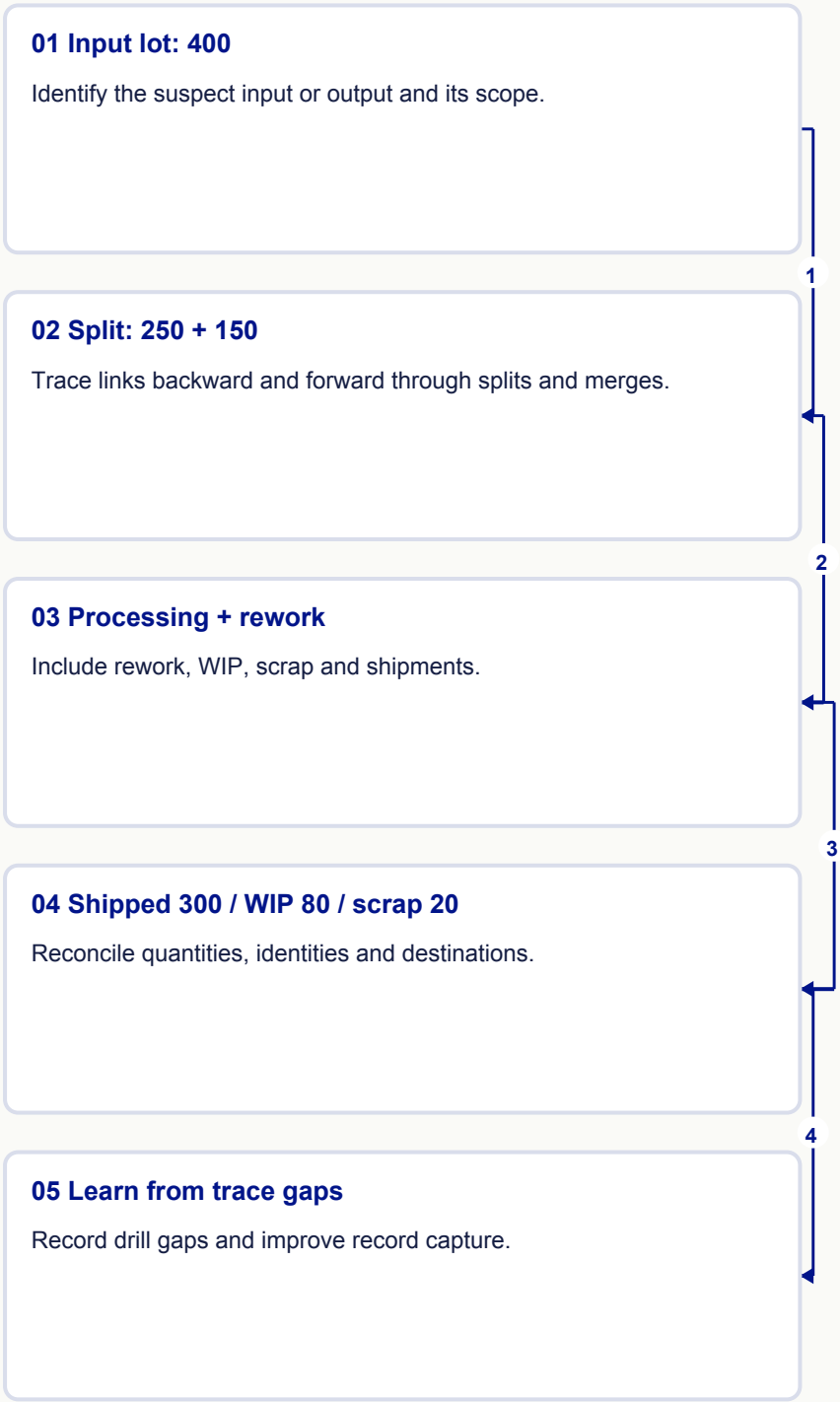
1. Quantity balance is necessary but not sufficient for trace completeness.

2. The example is a drill; actual containment or notification follows applicable authority.

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

See how the method works

Product traceability preserves identity through changes in material and work. A useful trace links inputs to outputs in both directions and follows splits, merges, rework and shipments. Start a drill with a clearly scoped suspect input or output, then collect the linked records and reconcile quantities and locations. A balanced total is necessary but not sufficient: records may still name the wrong destination or omit a rework link. Record gaps and improve the capture process before an actual containment event. The method supports locating affected product; it is distinct from metrological traceability, which concerns the reference chain and uncertainty of a measurement result.



Read every connection

1. Step 1 > 2
Continue with the next action

2. Step 2 > 3
Continue with the next action

3. Step 3 > 4
Continue with the next action

4. Step 4 > 5
Continue with the next action

Backward and forward links; include merges and rework.

Quantities reconcile but identity and destination evidence still need verification.

Method exhibit: Input lot: 400, Split: 250 + 150, Processing + rework, Shipped 300 / WIP 80 / scrap 20, Learn from trace gaps.

Follow the evidence and decisions

Inspect the supplied case inputs

Path	Shipped	WIP	Scrap
A:250 input	200	40	10
B:150 input	100	40	10
Total 400	300	80	20

01 / Define the suspect identity and direction

Luis identifies L70 and the reason for the trace, then follows both upstream and downstream links relevant to the scope. He records the starting evidence and any uncertainty.

Why: A trace needs a precise starting identity. Searching only a convenient downstream batch can miss other descendants of the same input.

Evidence / check: The drill scope names L70 and both split paths.

02 / Follow each split independently

He reconciles A as 200+40+10=250 and B as 100+40+10=150. He retains the path identities rather than merely summing the plant-wide totals.

Why: Separate reconciliation exposes a missing or duplicated path that a coincidentally balanced total could hide.

Evidence / check: Both paths have linked output/status records.

03 / Locate shipments and current stock

For the 300 shipped units, Luis verifies shipment IDs, destinations and quantities. He locates the 80 WIP units and verifies the 20 scrap records and actual disposition evidence.

Why: A quantity without a destination cannot support a complete exposure response. WIP and scrap labels need real identity/status evidence.

Evidence / check: Every known quantity has a location or retained destination record, except the declared gap.

04 / Include rework and merges

He checks whether either path entered rework or merged with other lots. Rework is a status/process link, not extra production to add to the total.

Why: A material path can be correct arithmetically yet broken genealogically. Merges can extend the set of affected outputs beyond a simple two-branch drawing.

Evidence / check: The trace record contains explicit rework/merge checks rather than an assumption of none.

05 / Resolve gaps before declaring completion

Luis reports the missing destination as unresolved, assigns the warehouse owner and preserves the balanced quantity evidence. Quality determines any required response using the actual scope.

Why: A truthful partial trace is more useful than a false complete label. Closure requires identity, destination and disposition evidence as well as arithmetic.

Evidence / check: The drill record states what is known, what remains uncertain and who resolves it.

Completed lot trace and gap record

Reconciliation	Arithmetic	Identity result
Path A	200+40+10=250	Verify every shipment/location link
Path B	100+40+10=150	One destination gap to resolve
Overall	300+80+20=400	Balanced, not yet a complete trace
Rework/merge	No quantity double-counting	Check actual genealogical links

A rework batch contains material from two lots

Path B material was merged with a second input lot during rework.

Decision

Trace the merged output identity and quantities for both inputs, and determine affected downstream scope through the authorized quality process.

Reasoning

A merge creates a relationship to retain, not permission to assign all output to one convenient original lot.

What would change the decision?

The record links both parent lots to the reworked output and its destinations.

Practise with a changed case

A new split with an unexplained gap

New input lot L91 has 240 units split 160 and 80. Recorded outputs are 150 shipped,60 WIP and 20 scrapped. A rework log mentions ten units but does not identify their current status.

Evidence	Quantity
Input	240
Shipped / WIP / scrap	150 /60 /20
Rework mention	10; status/location unresolved

Your task

1. Reconcile the known quantities and identify the gap.
2. Explain why the rework mention is not automatically an additional completed disposition.
3. List the identity/location evidence needed to close the trace.

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

Your practice worksheet

A new split with an unexplained gap

Starting lot

Path quantities

Known statuses

Unresolved quantity/identity

Owner and next evidence

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

Check your reasoning and transfer it

1. Known dispositions sum 150+60+20=230, leaving 10 units unresolved. The rework mention may explain their path, but current status and identity must be verified before assigning them to WIP, shipment or scrap.

2. Do not add the ten again if they are already included in another total. Trace the rework input/output IDs, location and disposition records, then reconcile the final mutually exclusive statuses.

Suggested completed record

Calculation	Result	Action
Known status sum	230	Compare with 240 input
Unresolved difference	10	Trace rework identity/status
Closure	Quantity and destination evidence	No automatic complete label

Plausible wrong turns

1. Rework is not a separate extra quantity when already counted in a current status.

2. Balanced totals alone do not prove destinations.

Evidence of a sound answer

1. Identify the ten-unit gap.

2. Avoid double counting.

3. Close identity and location as well as quantity.

Take the learning back to work

Commitment	Agreed follow-through
Owner	Traceability owner with warehouse and quality
Record	Genealogy, movement, status and drill-gap records
Review	At defined trace drills and after relevant process/record changes
Verification evidence	Complete identities, quantities and destinations across split/merge/rework
If unresolved	Repair record capture and verify a new trace opportunity when a drill exposes missing links.

Help someone else apply the method

Prepare

1. Lot/path cards
2. Movement ledger
3. Blank trace-gap record

Minutes	Activity and coaching prompt
5	Define the starting scope Which descendants must be followed?
8	Reconcile both paths Can the total balance while one path is wrong?
10	Resolve L91 What does the rework note actually prove?
5	Debrief closure Which destination evidence remains necessary?

Debrief

1. Ask learners to identify mutually exclusive current statuses.
2. Keep notification decisions with the authorized quality owner.

Individual or remote practice

Draw the lot links, then attach each quantity to a verified status and destination.

Connect the method and check its boundaries

Before application

1. Identifiable inputs and outputs
2. Records for splits, merges and disposition

Outside this lesson

1. Metrological traceability
2. Proof of completeness from arithmetic alone

AIAG: Traceability CQI-28

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Traceability supports product visibility and bounded recall; the guide includes self-assessment and traceability exercises.

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

Open this lesson and its visual aids