

Four words, one sentence

“It broke” aims no sensor. Written as mode, mechanism, cause and effect, the same event tells you where to look, what might be observable in the data, what to fix so it stops recurring, and why anyone should pay for the watching.

RECORD One mode, one row — four words and the two things that are not modes

- 01 Functional failure.** What the operating context requires, and the boundary at which the asset no longer meets it. The equipment may still be running.
- 02 Failure mode.** The way that loss of function occurs, named at maintainable-item level. The asset’s name is not a mode.
- 03 Failure mechanism.** The physical or chemical process doing the damage — fatigue, abrasive wear, corrosion, erosion, fouling, insulation breakdown, fretting. Named, not implied.
- 04 Failure cause.** Why the mechanism started or accelerated. Kept separate from the mechanism: causes are what root-cause work removes, mechanisms are what sensors watch while the causes persist.
- 05 Effect, at three levels.** Local, next level, end effect — with severity judged at the end effect, in this plant, this duty and this redundancy state.
- 06 Symptom — not a mode.** “Runs hot”, “trips on overload”, “noisy at the drive end”: useful as evidence pointers, useless as rows, because several modes produce each of them.
- 07 Detectable condition — narrower still.** Not “vibration”, but a defined change in a named component of the signal, measured at a stated location and load, against a comparator taken in the same state.

ASK Run each row past these before it enters the worksheet

- **Read right to left, does the row make a sentence?**
Cause, then mechanism, then mode, then effect, as one readable clause. If it does not read as a sentence, a word is missing or two are blurred.
- **Does the row have a mechanism?**
A row without one cannot be monitored, only mourned — the mechanism is the physics a measurement would have to go looking for.
- **Are two modes merged because they share a component?**
“Bearing seizes” and “bearing runs hot from misalignment” are different modes with different evidence. Merging them blinds the measurement choice.
- **Is severity scored at the end effect?**
The identical component failure in a standby with a demonstrated changeover has a trivial end effect. Modes travel between plants; effects do not.

THE BOUNDARY THIS CARD CARRIES

Read left to right, the row is a monitoring *question* — not yet a monitoring specification. Whether anything is detectable early enough to act on is a separate question, answered per mode and per context by evidence, never by the grammar. Where that evidence is absent the row stands at **NOT DEMONSTRATED**.