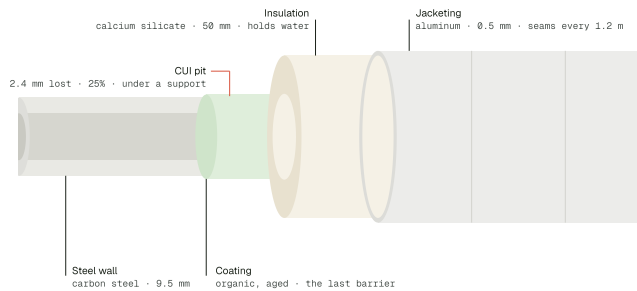


What sits between the probe and the steel.

A pulsed eddy current probe reads wall thickness through the jacketing and insulation without stripping anything. The layers below are the ones it has to see through, and the last one is the only one that matters.



Illustrative cutaway of a carbon-steel line under calcium silicate. The probe reads without stripping.

Water gets in at the seams. Corrosion starts at the supports, low points and dead legs, where it stays.

Jacketing keeps rain out until a seam opens or a walkway boot lands on it. Absorbent insulation such as calcium silicate then holds water against the coating, and the coating, if there is one, is what buys time.

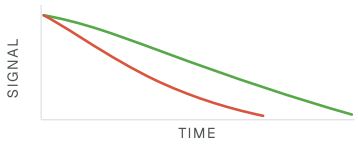
The temperature band does the rest. Between roughly 50 °C and 120 °C a carbon-steel wall stays wet and warm, which is the fastest corroding condition API 583 describes. Below that, condensation cycles; above about 175 °C, the wall dries out and the risk drops.

The probe reports one number per point: remaining wall. The workbench decides which points to read first.

HOW A READING IS TAKEN

A magnetic pulse,
then a decay curve.

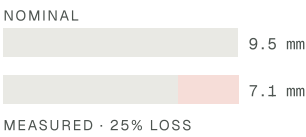
The probe switches a field on
through the insulation and
then off. Eddy currents in the
steel fade at a rate set by
how much steel is there.



WHAT THE CURVE SAYS

Thick wall, slow decay.
Thin wall, fast decay.

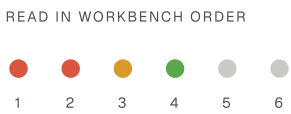
The time it takes the signal to
fall away is converted to an
average wall thickness under
the probe footprint. Nominal
9.5 mm reads as the slow
green curve; a wall at 7.1 mm
reads as the fast red one.



WHERE THE WORKBENCH
COMES IN

Every reading costs
crew time. The order
is the decision.

A crew can read a few
hundred points in a
campaign. Ranking the
circuits first means those
points land where the wet,
warm, uncoated steel is,
instead of wherever the
walkdown started.



P-320-068

#1 of 48 · Lean amine · CS · unit 320 · P1 · look first

SCORE

79

likelihood 87 × consequence
3 of 4

TIER

P1

look first

OPERATING TEMPERATURE

55 °C

carbon steel, worst band
50–120 °C

MAX WALL LOSS READ

29 %

6.7 mm of 9.5 mm at a support

ATTRIBUTE	VALUE
Service	Lean amine
Material · nominal wall	Carbon steel · 9.5 mm
Insulation	Calcium silicate, 50 mm, 28 years in service
Jacketing	Galvanized, condition fair
Coating	None
Environment	Wash-down zone
Damage points	4 supports, 1 low points
Last inspection	6 years ago · prior CUI on this circuit

WHAT DRIVES THE SCORE

55 °C

prior CUI found

fair jacket, calcium silicate

SUGGESTED FIRST LOOK

Strip insulation at the damage points. Visual and UT thickness on the exposed steel, RT profile at dead legs and low points.

READING POINTS (4)

POINT	WALL	LOSS
run	9.2 mm	3%
run	9.4 mm	1%
support · 18 m	6.7 mm	29%
run	9.3 mm	2%