*Which one would work today?*




# Find three proof-test dates in five minutes

*If you cannot find them quickly, raise it as a records finding.*

WHAT THIS IS ABOUT

# The failure you cannot see

In 1978, F. Stanley Nowlan and Howard Heap of United Airlines wrote a report for the US Department of Defense. It became the foundation of Reliability-Centred Maintenance, or RCM.

One of its most useful ideas is the **hidden failure**: a device that has failed, but gives no sign of it during normal operation.

This carousel explains why hidden failures matter so much for safety, and gives you a quick check for your own site.

THE IDEA

# Some devices only work when you need them

A pump that stops is noticed at once. But a relief valve, a trip or a fire pump only acts when something else goes wrong. On a normal day, a failed one looks exactly like a working one.

The risk is a **hidden failure combined with a demand** or another failure: the protective function is unavailable when it is needed.

Nowlan and Heap describe a **failure-finding task**: check a hidden-function item at an interval justified by its consequences, task effectiveness and available operating information, not simply by habit.

THINK ABOUT IT

# Three questions worth asking

1. How many protective devices on your site could fail today without anyone knowing?

2. Who chose the test interval for your trips and relief valves, and was it based on risk or on habit?

3. When a test finds a failed device, does anyone ask how long it had been failed, and change the interval?

YOUR MONDAY ACTION

# Five-minute check

1. Pick three protective devices: for example a relief valve, a trip and a fire pump.
2. Find the date and result of the last proof test for each one.
3. Check that each test was done on time, and that any failure was fixed and recorded.
4. A missing record is a records and control finding; it is not, by itself, evidence that the device has failed. Escalate it through your site's maintenance or safety process.

READ IT YOURSELF

# Reliability-Centered Maintenance

Nowlan, F. S., & Heap, H. F. (1978). *Reliability-Centered Maintenance*. Report ADA066579 (shown as AD/A066 579), United Airlines for the Office of the Assistant Secretary of Defense, 29 December 1978.

See the report's sections on hidden functions and scheduled failure-finding tasks. It is long, but very readable for an engineering report.

TELL US

**Did you find all three test dates in five minutes? Tell us how it went.**