

# Short Guide to Understanding Non-Destructive Testing Reports

## An Engineer's Interpretation Guide

Prepared by Bhargava Building Atelier Pvt Ltd (BBAPL)

**Topic:** Non-Destructive Testing Reports

**Audience:** Engineers, Project Heads, QA Teams

## Why NDT Report Interpretation Matters

A perfect NDT report can be risky.

As NDT becomes central to quality assurance, many failures do not come from testing errors. They come from **wrong interpretation**.

Studies show that nearly **30 percent of structural failures** are linked to inspection data being misunderstood or ignored. Reports are often read at face value, without questioning patterns or site realities.

An NDT report only adds value when engineers **interpret it with judgment**, not blind trust.

## What an NDT Report Really Tells You

NDT reports do not give final answers.

They provide **signals**, trends, and risk indicators.

A good engineer looks beyond pass or fail and asks:

- Do the values make sense for this structure?
- Are patterns realistic for site conditions?
- Do multiple tests support the same conclusion?



Uniform results are not always good results.

## **Core Sections Engineers Must Review Carefully**

Most mistakes happen in these areas:

- Technician details and certification level
- Testing method and applicable standard
- Equipment calibration validity
- Environmental conditions during testing
- Findings and indication description
- Acceptance or rejection criteria reference

If any of these are unclear, interpretation becomes unreliable.

## **What Different NDT Methods Can and Cannot Tell You**

### **Rebound Hammer Testing**

Used mainly for concrete.

Tells you:

- Surface hardness
- Relative strength comparison
- Uniformity between zones

Does not tell you:

- True core strength
- Internal voids or deep defects

Key insight:

Too much uniformity can signal surface treatment or carbonation.

## **Ultrasonic Testing**

Common for steel and welds.

Tells you:

- Internal discontinuities
- Defect location and depth

Does not tell you:

- Exact defect shape without experience
- Severity without acceptance criteria

Key insight:

Signal amplitude alone is not enough. Context matters.

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## **Radiographic Testing**

Used for weld quality verification.

Tells you:

- Internal weld defects



- Porosity, inclusions, lack of fusion

Does not tell you:

- Structural impact without engineering judgment

Key insight:

Image quality indicators decide reliability, not just images.

### **Magnetic Particle Testing**

Used for surface and near-surface defects.

Tells you:

- Crack presence and orientation
- Surface flaw severity

Does not tell you:

- Deep internal defects

Key insight:

Correct classification of indications avoids false rejections.

### **Common NDT Terms Engineers Must Understand**

- **Acceptable:** Within limits. No action needed
- **Recordable:** Logged for future monitoring
- **Rejectable:** Must be repaired or replaced
- **Fitness-for-Purpose:** Needs engineering evaluation



Misreading these terms leads to wrong decisions and high costs.

## Certification Levels Matter

Not all reports carry the same authority.

- Level I: Performs tests under supervision
- Level II: Interprets results and writes reports
- Level III: Final authority on procedures and decisions

For critical structures, always involve **Level III oversight**.

## How Engineers Should Make Decisions

Do not rely on a single value.

Evaluate:

- Defect size versus limits
- Location and stress level
- Service conditions
- Repair feasibility
- Consequence of failure

Wrong acceptance can cost **10 times more** than verification.

## Key Takeaway for Engineers

NDT reports are tools, not verdicts.

Exceptional engineers:



- Question perfect results
- Correlate multiple tests
- Understand site conditions
- Balance safety, cost, and risk

The goal is not just compliance.  
The goal is **safe and reliable structures**.

## **BBAPL's Interpretation Philosophy**

At Bhargava Building Atelier Pvt Ltd, we focus on:

- Pattern-based analysis
- Risk-aware interpretation
- Actionable recommendations
- Data-driven decision support

Because quality assurance does not end at testing.  
It begins with interpretation.

### **Connect with BBAPL:**

#### **Bhargava Building Atelier Pvt Ltd.**

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