BLUE RAY INSPECTION SERVICES

AN INTRODUCTION TO

NON DESTRUCTIVE TESTING

(TRAINING & SERVICES)

WHAT IS NONDESTRUCTIVE TESTING ?

- **NONDESTRUCTIVE TESTING is defined as:**

  Any method for examining an object or material in any manner which will not impair its future usefulness...

- **Simply stated, it is exactly what its name implies:**

☞ **TESTING WITHOUT DESTROYING**

Why are Nondestructive Tests Performed?

- **The purpose of the test may be to:**
  - **detect internal or external flaws,**
  - **measure geometric characteristics,**
  - **determine material structure or composition,**
  - **measure some of the object’s or material's properties**

What kinds of Nondestructive Tests are there?

Today there are many different Nondestructive Testing methods employed. There are, however, five methods of Nondestructive Evaluation that are very widely known and applied. These are:

- **Radiography**
- **Magnetic Particle**
- **Ultrasonics**
- **Liquid Penetrant**
- **Visual**

Can you tell me a little more about what Nondestructive Evaluation is used for ?

Increasingly, in our nuclear and space age, which some engineers have called the "*materials age*",

No material is perfect, but it must have adequate properties to meet the increasingly rigorous demands made upon it. NDT (as it is abbreviated) provides the means to assure the detection or measurement of significant properties or performance capabilities of materials, parts, assemblies, equipment or structures without impairing their serviceability.

Where is Nondestructive Testing Used?

Some industries in which NDT plays a key role include the following:

- Aerospace
- Aircraft
- Automotive
- Casting & Forging
- Chemical & Petroleum
- Construction
- Electronics
- Food Processing
- Marine
- Materials Joining
- Security
- Metals
- Non-Metals
- Nuclear
- Ordnance
- Transportation
- Utilities

Tell me more about the methods of Nondestructive Testing students learn about in Blue Ray Inspection Services (BRIS) NDT On-Line Training programs.

RADIOGRAPHY

- **RT involves the use of penetrating X or gamma radiation to examine parts and products for imperfections. An X-ray machine or radioactive isotope is used as a source of radiation. Radiation is directed through a part and onto film. When the film is developed, a shadowgraph is obtained that shows the internal soundness of a part. Possible imperfections show up as density changes in the film, in much the same manner as a medical radiograph can show broken bones.**

MAGNETIC PARTICLE

- **MT is done by inducing a magnetic field in a ferromagnetic material and dusting the surface with iron particles (either dry or suspended in a liquid). Surface imperfections will distort the magnetic field and concentrate the iron particles near such discontinuities, thus indicating their presence.**

ULTRASONICS

- UT uses the transmission of high frequency sound waves into a material to detect imperfections within the material, or changes in material properties. The most commonly used ultrasonic testing technique is pulse-echo testing, wherein sound is introduced into the test object and reflections (echoes) are returned to a receiver from internal imperfections or from geometrical surfaces of the part.

LIQUID PENETRANT

- **PT is probably the most widely used NDT method. The test object or material is coated with a visible or fluorescent dye solution. The excess dye is removed from the surface, and then a developer is applied. The developer acts like a blotter and draws penetrant out of imperfections which are open to the surface. With visible dyes, the vivid color contrast between the penetrant and the developer makes the "bleedout" easy to see. With fluorescent dyes, an ultraviolet lamp is used to make the "bleedout" fluoresce brightly, thus allowing the imperfections to be seen readily.**

VISUAL EXAMINATION

- **VT is probably the oldest and most common method of NDT, having numerous industrial and commercial applications. Examiners follow procedures ranging from simple to very complex, some of which involve comparison of workmanship samples with production parts. Visual techniques are used with all other NDT methods.**

SPECIAL NDT METHODS

- **NDT engineers, and technicians also use microwaves, ultrasonic imaging, lasers. holography, liquid crystals, and infrared-thermal testing techniques in addition to many other specialized methods. In fact, there are almost 80 different evaluation methods identified as being NONDESTRUCTIVE.**

The field of NDT needs well trained, educated technicians !!!

- **For the past 15 years, demand for trained, educated NDT technicians has increased. This means that if you want to obtain a degree in a field with more jobs than people:**
- **THIS INDUSTRY NEEDS YOU !!!!!**

Talk to one of our instructors today!

Call us at +91 96555 86445 ;

+91 98425 39525 or email bristraining@gmail.com; or visit our web: brisndt.in to discuss your future.

THE AMERICAN SOCIETY FOR NONDESTRUCTIVE TESTING

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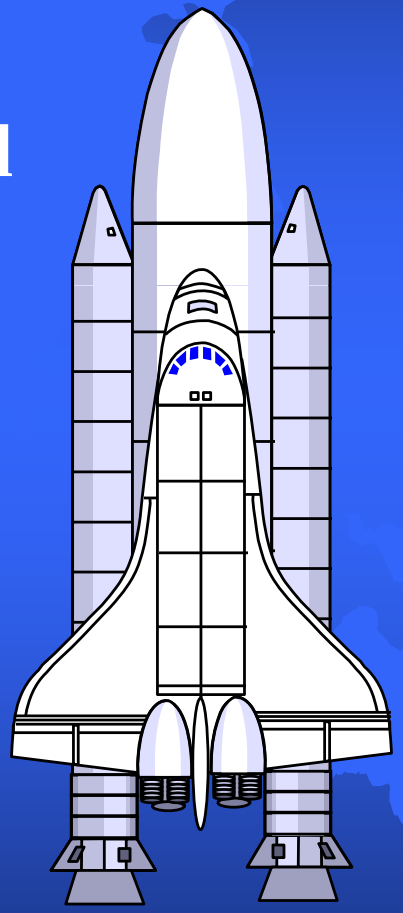
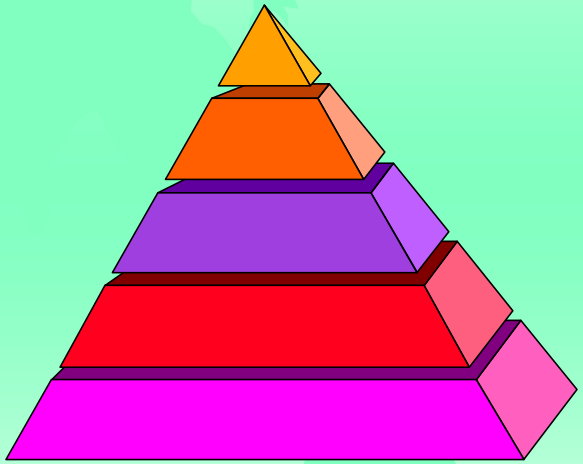
NDT PERSONNEL QUALIFICATION AND CERTIFICATION

- As new NDT methods and techniques were invented, developed and applied, the need for trained technicians grew rapidly. It soon became apparent that NDT technicians and engineers with suitable training and qualifications were in very short supply. There were NO accredited colleges teaching NDT !!!!



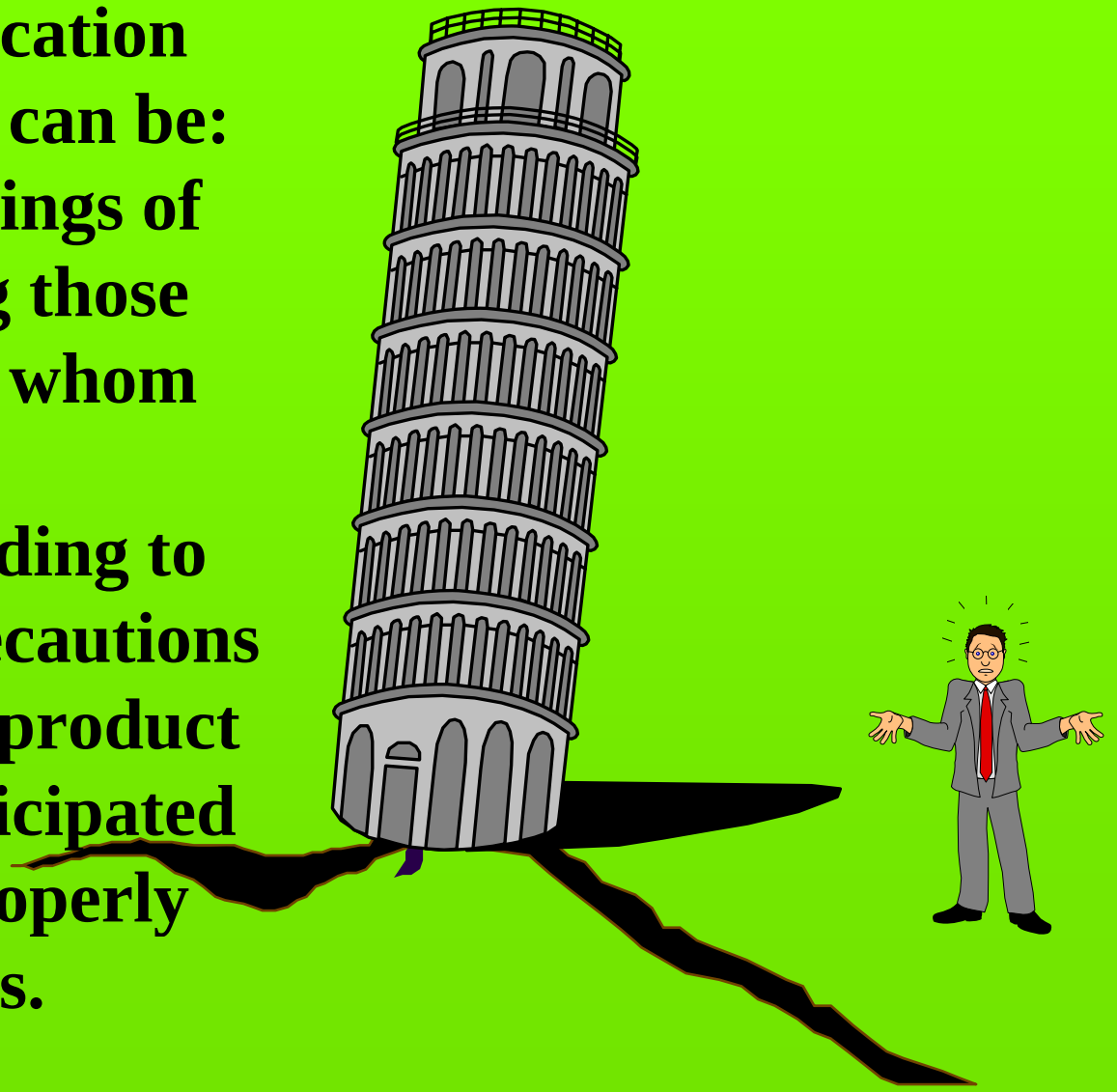
MEANS OF UNIFORM CERTIFICATION

- **There are a number of reasons for certifying NDT personnel. One, employers have a uniform means of qualifying and ranking technicians. Two, customers are supplied with a means of judging the quality of a vendor's NDT program. Three, certification aids in assuring that NDT personnel are qualified to perform assigned tasks. And, four, technicians have a means for progressing within their profession.**



The value of Certification

- **Without certification activities there can be: unjustified feelings of security among those individuals for whom the testing is performed, leading to inadequate precautions being taken in product use, and unanticipated failure of improperly tested materials.**



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