

# Pipeline Usage in the Future

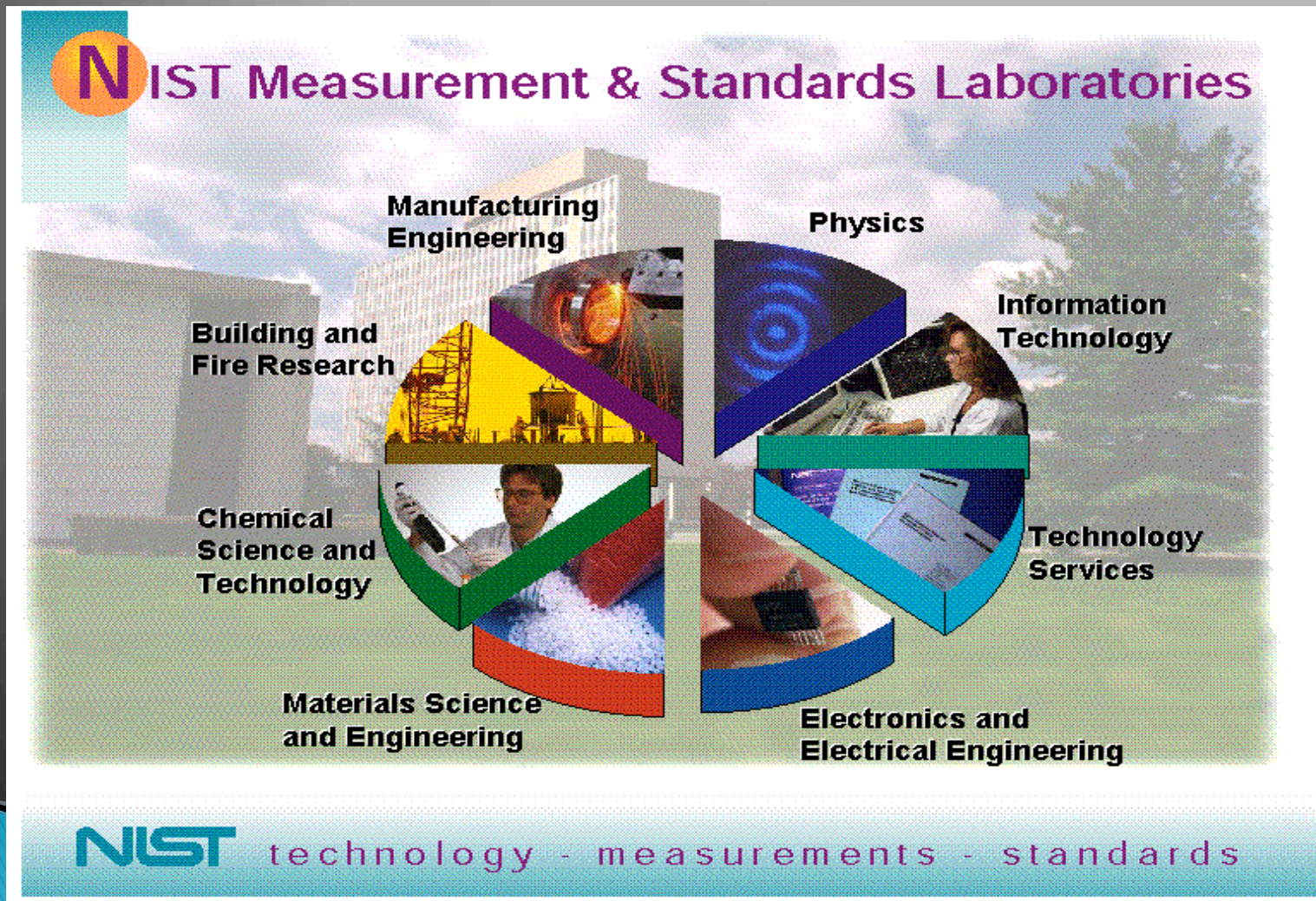
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For the  
DOT Pipeline Forum

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Crystal City, Virginia



# NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY



**NIST** Measurement & Standards Laboratories

**Manufacturing Engineering**

**Physics**

**Information Technology**

**Technology Services**

**Building and Fire Research**

**Chemical Science and Technology**

**Materials Science and Engineering**

**Electronics and Electrical Engineering**

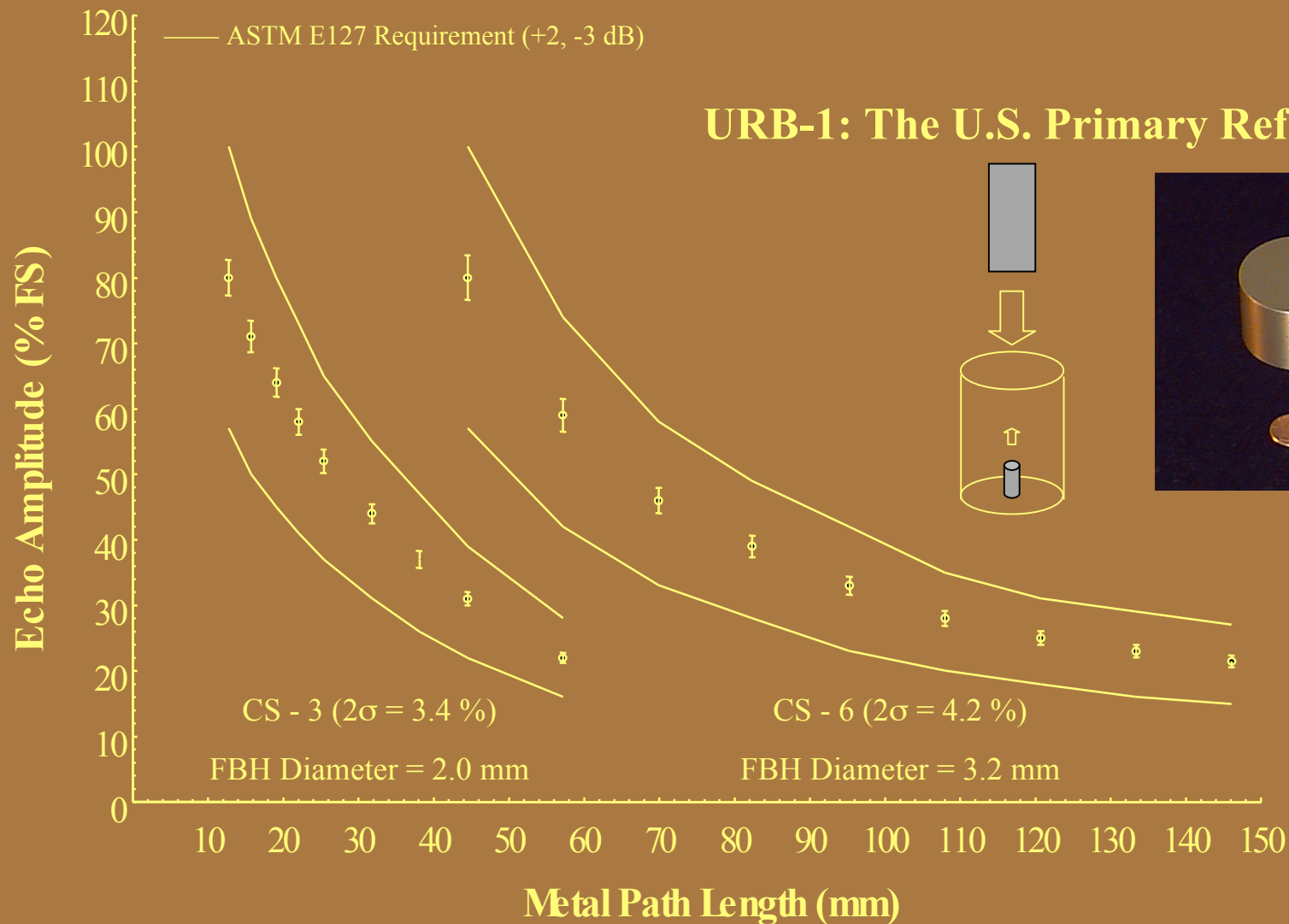
**NIST** technology - measurements - standards

The graphic features a central circular arrangement of eight colored segments, each containing a photograph related to a specific laboratory. The segments are: Manufacturing Engineering (purple, top), Physics (dark blue, top-right), Information Technology (light blue, right), Technology Services (teal, bottom-right), Electronics and Electrical Engineering (blue, bottom), Materials Science and Engineering (red, bottom-left), Chemical Science and Technology (green, left), and Building and Fire Research (yellow, top-left). The background is a grayscale image of a large industrial building. The NIST logo is in the top left, and the tagline 'technology - measurements - standards' is at the bottom.

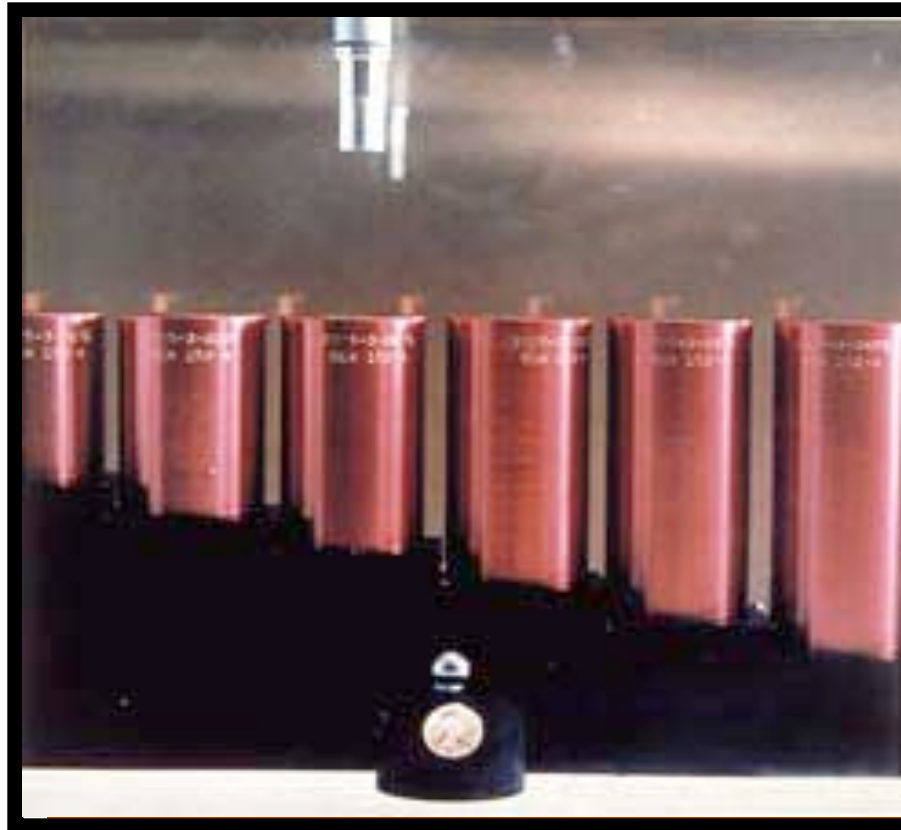
# Topics

1. **Technology Innovation Program (TIP)  
Funded Programs**
2. **Research in NDE Techniques, esp.  
Wideband Acoustic Emission**
3. **Staffing Plans in NDE Program**

# Ultrasonic Reference Block Calibration



# Reference Blocks and Transducer



## Other SRMs

RM 8458 - Artificial Flaw for Eddy Current

## Obsolete

SRM 1001 – X-ray Film Step Tablet

SRM 1821 – Penetrant Test Block

SRM 1842 and 1843 - Laminography IQIs

SRM 4200 – Gamma Ray Point Sources

# Peak oil

- ▶ Are we there yet?
- ▶ If not, then soon
- ▶ How will this change the energy landscape?



# Pipeline Usage in the Future

- ▶ Pace of change in products is increasing
  - Some resources nearly depleted
  - New products expanding (ethanol, CO<sub>2</sub>)
- ▶ New Administration
  - Develop national biofuel market plan
  - Coordinate infrastructure policy
  - Improved sustainability of production

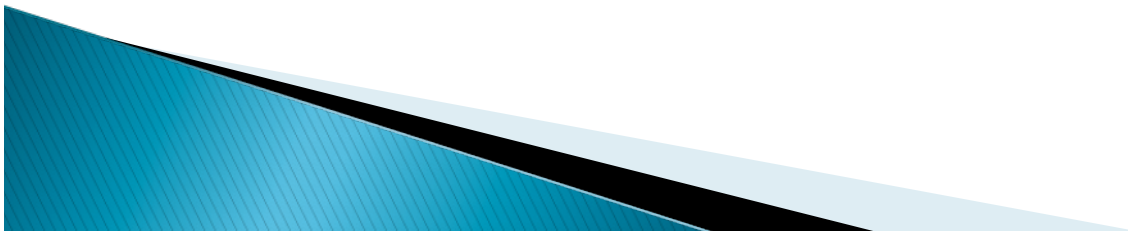
EPM, July 9, 2009, page 40.





# Ethanol

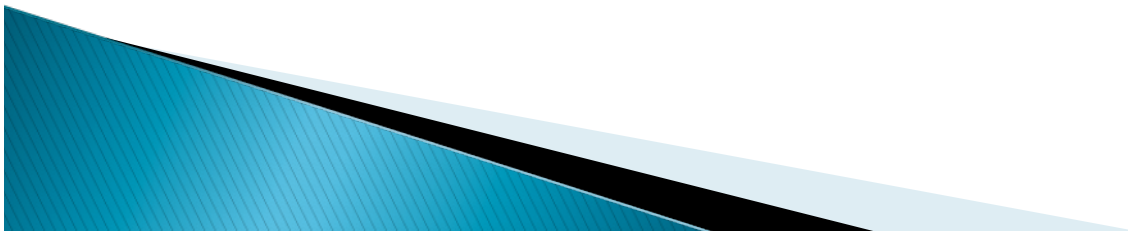
- ▶ 5 B gallons in 2007
- ▶ 9 B gallons in 2009 ( 10% of gasoline usage)
- ▶ 20 B gallons in 2015 ( 15 corn - 5 cellulosic)



# Hydrogen

- ▶ 6 B kilograms produced in 2008
- ▶ Transportation costs are substantial
  - \$10 per kilogram by tank truck
  - \$ 3 per kilogram as liquid in truck
  - \$ 1 per kilogram by pipeline

• NHA



# Carbon capture and storage

- ▶ Carbon cap-and-trade being promoted
- ▶ CO<sub>2</sub> must be transported from sources to repositories



# Bottom line

- ▶ Likely repurposing of pipelines
  - What will happen to passivating coatings?
  - Will there be different interactions at pits and cracks?

