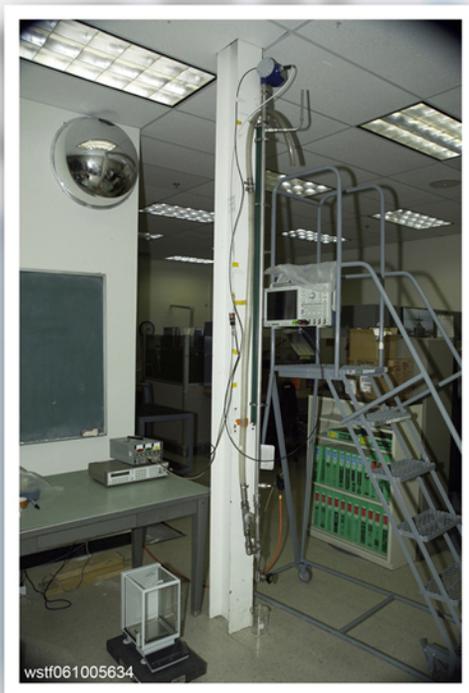


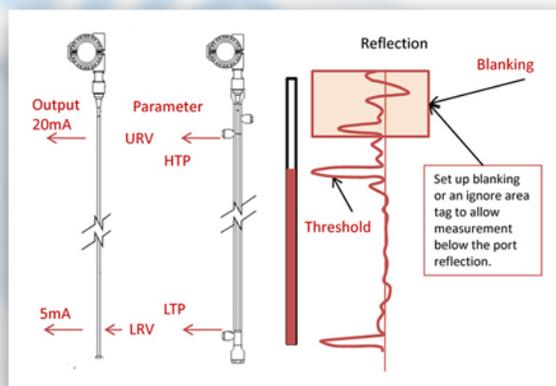


# Innovation @ WSTF 2011

## Wave Tube Liquid Level Indicator Implementation in Propulsion Testing



Wave Tube Characterization Setup with Scope and Scale



### Issue

WSTF needs to provide a more accurate measure of pulse flow for engine testing. Currently, vibrations from engine testing in test stands can cause erroneous readings from wave tubes.

### Solution:

#### Wave Tube Liquid Level Measurement

- Takes Time Domain Reflectometry measurement along a guide that runs the length of the vessel
- Measures signal pulse time of flight from sensor initiation to liquid level pulse reflection
- Provides linear output, 4-20mA between lower and upper set points

### Capability

- Measures liquid level of pressurized hazardous fluids
- Provides accurate measurement of propellant consumption
- Offers system pressure rated design
- Replaces manned visual requirement (sight glass)
- Ensures material compatibility
- Has no mechanical moving components
- Gives real-time electronic liquid level measurement

This new wave tube technology is expected to provide more accurate readings of pulse flow by transmitting liquid level measurements up to 2000 times per second.

