Old Dominion University

Maglev Demonstration Project

Nevada Legislative

Commission Committee

June 15, 2004

Outline

- Overall ODU Maglev objectives
- Initial Maglev Project- Goals and Status
- The Maglev Demonstrable Engineering Prototype—Goals and Status
- Summary

An ODU Perspective on Maglev Application

- **The U.S. transportation problem is serious and worsening**
  - Short-haul air travel is restricted by airport capacity and security concerns
  - Interstates are at capacity in many areas
  - U.S. high-speed rail is in its infancy, with Amtrak experiencing difficulties
- **Maglev offers one option for medium-speed intra-urban and/or high-speed inter-city travel**
- **The U.S. trade balance is currently $1.73 in imports per $1 exported**
  - **Many U.S. Maglev projects propose purchase of Transrapid vehicles**

A serious U.S. R&D effort to develop Maglev specifically for the U.S. environment appears warranted.

ODU Maglev Objectives

- Establish Maglev Systems As Economical and Practical for Public Transportation (<$20M/mi)
- Provide A Functional Transportation System For Old Dominion University
- Establish Old Dominion University As Leading Research University In Maglev Technology
- Qualify System For Passenger Applications


3400 ft.
ODU Maglev People Mover Project

Commonwealth Maglev Project

- Participants
  - American Maglev Transportation Inc.
  - Dominion Resources, Lockheed Martin, et. al
  - Commonwealth of Virginia
- Project funding
  - $21-million overall estimated project cost
  - Initial Private-State participation @ $14M, pending Federal support
- Old Dominion acted as the host for the project

Strategic Alliance for Initial Project

- American Maglev Technology (Patents/ Site Management)
  - Dominion Virginia Power
    - Provide power equipment and site power
  - Lockheed Martin
    - Design vehicles, guiderails, system controls, system integration, system tests
- Old Dominion University
  - Role of Host ⇒ (Coordination/Technical Assessment)

Project Status As Of Fall 2002

- Guideway Construction Completed
- Station Designs Approved
- Station Construction Started
- Vehicle Delivered to ODU / Mounted on Guideway
- Guiderail Alignment Started
- Vehicle and Guideway Testing Started

Transfer of AMT Maglev Vehicle to Old Dominion University

Guideway construction completed in 39 days

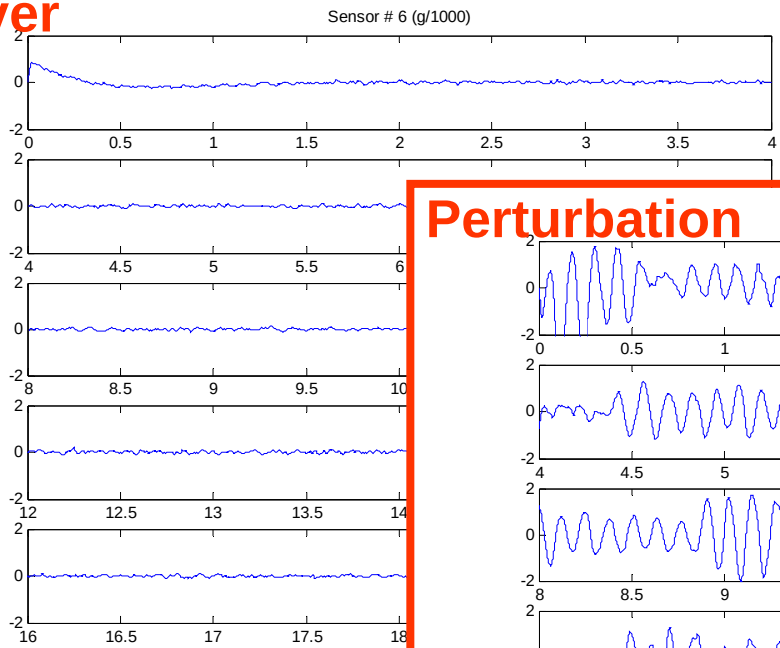
R&D Activities at AMT's Edgewater, Florida Site
- Initial Development/Test Facility
- Assembled ODU Vehicle
- Tested low-speed performance

Edgewater Facility Includes
- 7-mile abandoned railroad (R-O-W)
- Power and power conditioning
- Vehicle shelter building

Vehicle and elevated guideway
- Levitated
- Shakedown tests

Time History of Sensor-3 for 3 Data-Sets

Hover

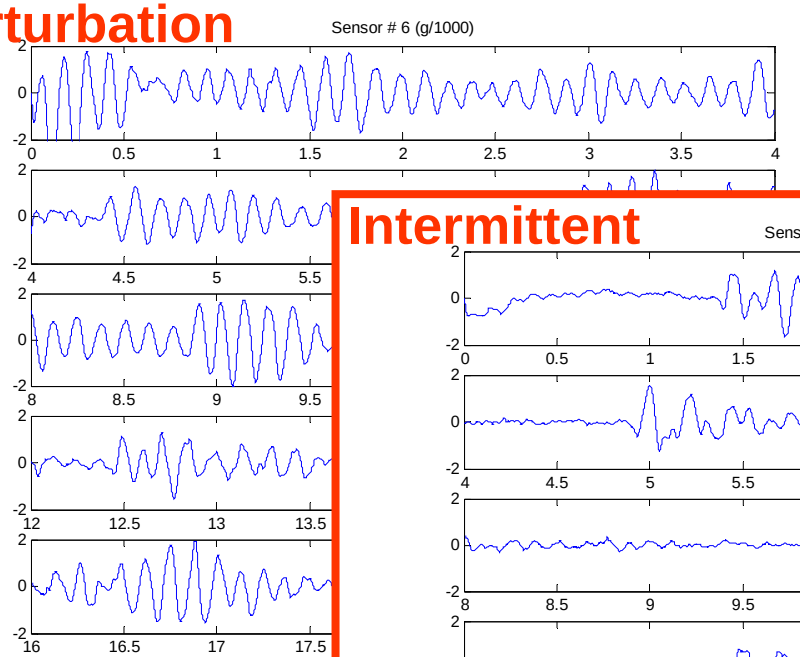


Filter:

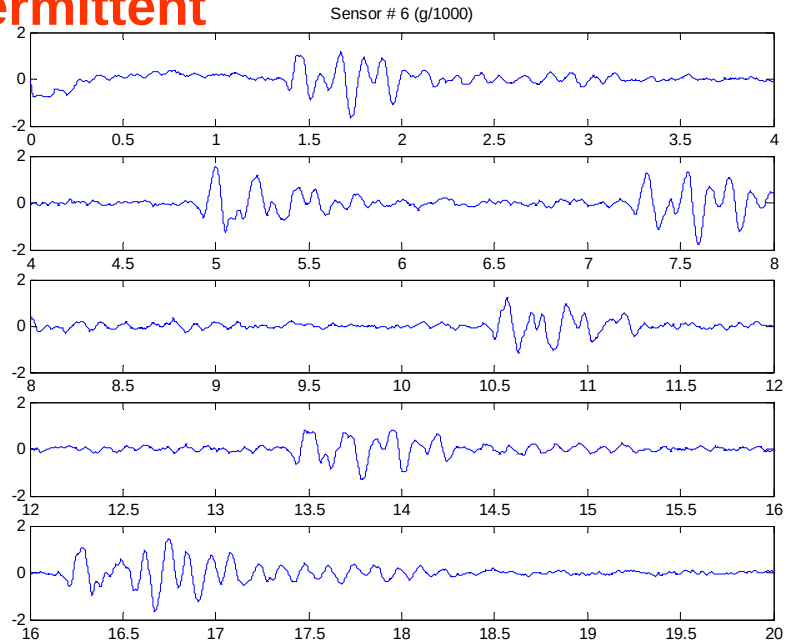
High Pass: 0.5 Hz

Low pass: 20 Hz

Perturbation



Intermittent



Max Accel

Hover: 0.2x10^{-3} g

Pert: 3.45 x10^{-3} g

Interm: 1.76 x10^{-3} g

Vibration centers in 5-8 Hz range

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Objectives of Demonstrable Engineering Prototype (DEP)

- "… to bring the ODU/AMT urban Maglev system to Demonstrable Engineering Prototype Status"
- DEP means "routinely operational at performance levels that are comparable…to an operational campus transportation system, but not yet intended for scheduled use in the public sector"
- "System will be levitated and propelled over 305m of guide way"
  - Target speed is 18m/sec
  - Velocity profile tracking, breaking and station acquisition to be verified

DEP Task Areas - $1.987 M Budget

1. Systems Integration
2. Management
3. Vehicle Development
4. Infrastructure Development
5. Tests
6. ODU Test Support

In general, ODU and AMT are involved in all tasks

Significant Milestones

Test		Date
T1 -	Test One DOF Levitation System	June 04
T2 -	Levitate With Best Prior Controller	Aug. 04
T3 -	Levitation Tests At Multiple Points Over 170’ Of Guideway	Oct. 04
T4 -	Demonstrate Forward Motion Over 170’	Nov. 04
T5 -	1100’ @ 18m/s (actual max speed TBD)	Jan. 05

There is a baseline plan but activities will be adjusted on the basis of Performance on the tests

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Future Plans

- Federal Appropriation
  - Extension of a Successful Team Effort
  - Establish a Maglev Technology Deployment Center at Old Dominion University
- Evolve a Maglev technology deployment and test facility for public acceptance of these transportation systems--near term
- We would be happy to form a working relationship

Summary

- Maglev technology can play an important role in meeting transportation needs
- The DEP is aimed at demonstrating the viability of the Maglev system at Old Dominion University and therefore at other locations
- We have a comprehensive plan featuring a progressive sequence of Tests on a real system
- We would be happy to invite you to the tests and explore a working relationship at your pleasure

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