Marine Terminal Management Training Program
Current and Future Role of Technology in marine terminals
Agenda

- Overview of Terminals
- Role of Technology
- Technology for the Operation
- Types of Technology
- Benefits of Technology
World’s trade with USA continues to grow

USA ports have limited capacity to expand

Existing terminal capacity will be exceeded by 2010 in most USA ports

Double digit growth has been experienced in many ports

Double digit growth is expected to continue
Updating Operations

- Opportunity to improve traditional method of container handling
  - Greenfield sites
  - Overhauling/Retrofitting existing terminal facilities
Terminal Capacity

- Stacking Density – Increase terminal capacity
  - Current:
    - US East Coast 3,500
    - US West Coast 4,200
    - Europe & Asia 8,000+
  - Future – Dependent on technology and stacking practices
Role of Technology

- **Safety**
  - Remote operations will relocate traditionally high risk jobs to safer working environments
  - Segregation of on-terminal traffic provides for increased terminal safety
  - Average Lost Time Accident costs
    - $19K National (all industry)
    - $29K Longshore
Role of Technology

- Security
  - Surveillance
  - Facility Access Management
  - Radiation Portal Monitoring
Role of Technology

- **Operations**
  - Production/Costs
    - Marine Productivity
    - Truck Turn Time – Reduction through advanced notification

- **Equipment / Maintenance**
  - Tracking
  - Remote Diagnostics
  - Remote equipment reset.
Role of Technology

- **Environmental**
  - Terminal efficiencies will reduce trucker idle time, thus reducing emissions
  - Electric vs. diesel wharf and yard cranes
  - On-dock rail will take trucks off the road each year
Finding Technology that Fits

1. Visit/View Best Practices - technology in use

2. Set Goals and Objectives

3. Create Operational Functional Specification
   - Drives the IT Specification
   - Drives Power Equipment Specifications

4. Simulate Operation

5. Procure Equipment

6. Develop and Train staff
Radio Frequency Identification (RFID)

- RFID tags may be used in order to identify Over-the-Road trucks prior to arrival at the facility
  - Combination of Pre-arrival Information and Automated Yard Machinery can significantly reduce turn times
- RFID tags may also be used for matching appointments to truck visits.
- RFID tags may be used to identify container transactions at various points within the terminal yard
  - Pinpoint yard problem areas
  - Ensure truck visits comply with instructions
    - Less miscellaneous yard cleanup
Optical Character Recognition (OCR)

- OCR cameras in the Gate Portals

- OCR images may be matched with RFID numbers and validated against an appointment.

- OCR is capable of capturing the container and chassis identification numbers.
Security System

- Security System should be responsible for access and surveillance coverage (CCTV)

- Security System is also responsible for points of entry (gates)

- Security System may interface with Vehicle System to determine appropriate drivers/operators

- Time checks in and out of term
Vehicle System

- Vehicle System incorporated in all Container Handling Equipment
  - Vehicle System incorporates the use of DGPS

- Vehicle System interfaces with TOS for container position updates

- Vehicle System interfaces with the TOS in order to receive orders for container movement
Stack Operations

- Rail Mounted Gantry
  - Design – varies according to simulation results and operational needs
  - Stack Density – simulate in order to determine design efficiency and proper size
- Remote Operation
Benefits of Technology

- Increase throughput per acre
- Allows Management team to be more Informed through use of improved, real-time information flow
- Improve terminal operations performance by limiting variables (creating consistency)
- Technology is not successful without the right people!
A Vision for the Future
In Hampton Roads and Around the World
Thank You