HIGH LEVEL REVIEW

SAFETY TECHNOLOGIES

See. Mitigate. Manage.

Sal Angelone
Safety Services & Technology Solutions
Caterpillar Inc.
OUR SAFETY JOURNEY // 2003 – 2016

92% RIF IMPROVEMENT

INJURY RATE REDUCTION = 72,367 INJURIES PREVENTED

58% INCREASE IN WORKFORCE

RECORDABLE INJURY FREQUENCY
Culture & Fatigue

Commitment. Accountability. Involvement.

ZIP Process

Engage & Communicate
Assess
Build
Implement
Develop
Engage & Communicate

Smartband
Fatigue Avoidance Scheduling Tool (FAST)
Driver Safety System (DSS)
Experts, Consultants, Tools, Systems, Services, Monitoring, Reporting & Analysis

Cat Detect for Personnel
80% of us have Optimism Bias

The tendency to believe that one is less at risk of experiencing a negative event as compared to others.
Fatigue & Distraction

Layers of Protection
CDP – CAT DETECT FOR PERSONNEL

BLIND SPOT RISK MITIGATION – NIOSH REPORT

- Track Type Tractor
- Wheel Loaders
- Off Highway Trucks
- Hydraulic Excavator
- Vocational Trucks
- Backhoe Loader
- Motorgrader
- Compactors
- Milling Machines
- Road Recycler
Cat Detect for Personnel

RFID Wearables

Video Overview ~
https://channel1.mediaspace.kaltura.com/media/CAT+DETECT+FOR+PERSONNEL+DEMONSTRATION/1_cwhkernt

Active Alerts!
People Detection Tool!

Risk Management with Targeted & Timely Information to Change Behavior’
WIRELESS DATA COLLECTION
CUSTOMER - LESSONS LEARNED
CAT DETECT FOR PERSONNEL

- Information Helped Define Base Line of Risk Events
- Shift Changes Were Increasing Foot Traffic Around Equipment
- Learned that Current Traffic Patterns Were Creating Unnecessary Risk
- Leverage Antenna Adjustments to Optimize Danger Zone Coverage
- Management Used Information to Re-trained Employees
FATIGUED OR FIT FOR DUTY?
CAT® SMARTBAND

BUILT WITH US ARMY TECHNOLOGY

SLEEP FACTORS
- Quantity of Sleep
- Time of Day
- Consistency of Sleep & Wake Time
- Cumulative Sleep Debt
- Acute & Subtle Wake Episodes
- Time Zone
- Circadian Rhythm

CAT® SMARTBAND

BUILT WITH US ARMY TECHNOLOGY
TECHNOLOGY // DRIVER SAFETY SYSTEM (DSS)

- **Technology**
  - Measures eyelid closure
  - Measures head orientation
  - Creates Compressed Video File

- **Fatigue events**
  - Eyes closed (duration > 1.5sec)
  - Machine in motion (speed > 4mph)

- **Distraction events**
  - Look away from road (duration > 4.5sec)
  - Machine in motion (speed > 10mph)
FRA – FATIGUE RISK ASSESSMENT

- SEE: Current level of Risk
- MITIGATE: Issue alerts
- MANAGE: People, Processes, Technology

80% REDUCTION IN FATIGUE EVENTS
THANK YOU!