

Type B
Accident Investigation Board Report
On the February 25, 2009
Abdominal Injury
To a Passenger in an Electric Cart
Waste Isolation Pilot Plant
Carlsbad, New Mexico



April 2009
U.S. Department of Energy
Carlsbad Field Office



Type B Board

Gene Runkle, DOE RW-9

Don Galbraith, DOE CBFO

Erin Preciado, DOE CBFO

Nathan Morley, NNSA/SC

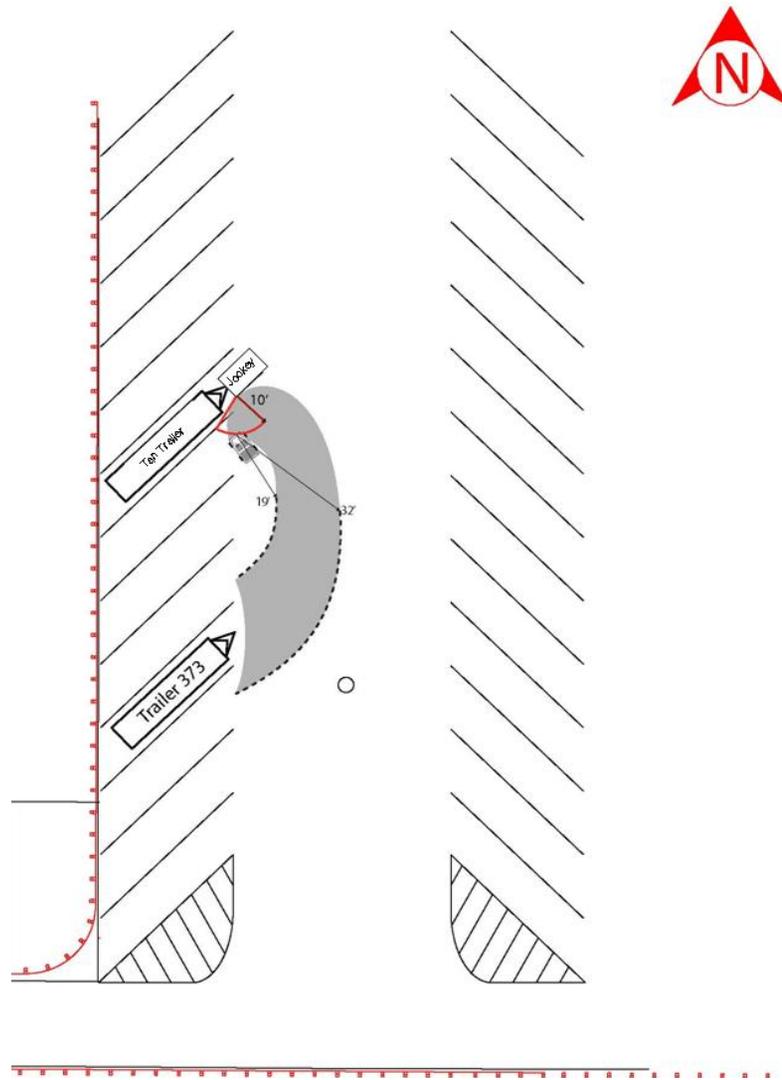
Ralph Fevig, Sandia National Laboratories



Figure 2: WIPP Surface Facilities



Figure 3: Schematic of the Accident Scene



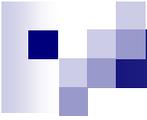


Figure 7: Taylor-Dunn Cart Involved in Accident (showing angle related to trailer)



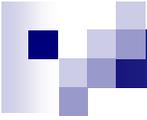


Figure 5: Shirt Worn by Injured Worker (cut/torn as part of primary medical care)



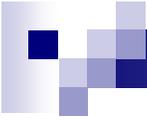
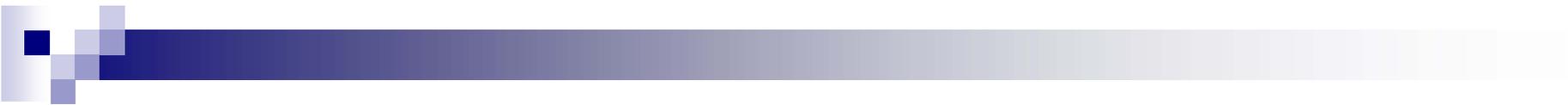


Figure 8: Taylor-Dunn Cart Involved in Accident (from the front of the trailer)



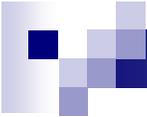


This Accident Did Not Need To Happen

June 2007 WTS documented endpoint for spotters

- Challenged by one questioning manager
- Told to continue by next level manager
 - Never looked at with a Job Hazard Analysis
- Continued for 34 months (today)





This Accident Did Not Need To Happen

Family Day – 14 Assigned to Floor and Yard

- Normally 3-7 assigned on other days
- Spotter Cart needs one person
- Day of Accident two carts with three persons each in parking lot



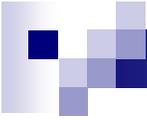


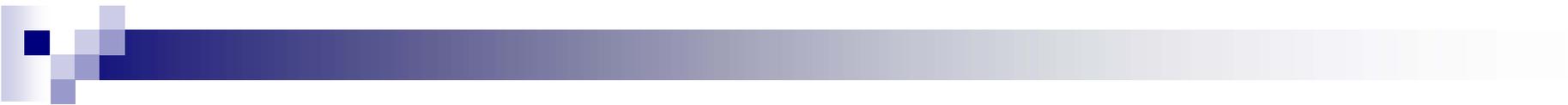
Figure 9: Cart Accelerator Pedal



This Accident Did Not Need To Happen

- Tribal knowledge of passengers putting foot on accelerator not communicated
 - Common occurrence but everyone took personal ownership
 - Not recognized as important safety concern
 - Not reported through WIPP Forms or Close Call Program
- Management needs to encourage and recognize those reports
- WTS Proactive in getting the required retrofit





This Accident Did Not Need To Happen

- Electric Cart Maintenance did not include periodic chain adjustment, semi-annual and annual manufacturer requirements
 - Electric Cart 75-C-136 non-functioning back-up alarm, and automatic seat brake, and damaged power cord
 - Last inspection 1/7/09
 - Brake and chain issues discovered by Board
 - Resulted in over ride of braking system when the accelerator fully engaged.





This Accident Did Not Need To Happen

- Job Hazard Analysis (JHA) not performed for electric cart surface activities
 - 2004 JHA performed for underground
 - Does not include electric carts driving near or under protruding equipment
 - Supervision does not visit parking areas
 - Categorized as Low Hazard Activity
 - March 9, 2009 JHA for Electric Cart Operators
 - Use as a work platform?
 - No account of protruding hazards



Contributing Causes

- JHA not performed for electric cart use on surface
- Training not formal or complete
- Formal inspections not required
- Previously identified issues not communicated
- Effectiveness of past corrective actions, including vehicle issues not evaluated
- Oversight of vehicular safety not conducted by WTS or CBFO
- Family Day resulted in unrecognized safety concerns

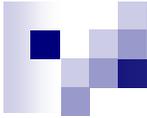


Root Causes

- Designed location of acceleration pedal allowed front seat passenger to engage accelerator
- Maintenance of electric carts did not meet manufacturer's recommendation
- WTS determined cart activity was:
 - Low Risk
 - Short-term
 - No hazard analysis performed
 - Controls not implemented
 - Lack of oversight

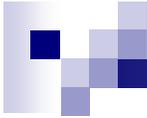
Board determined this to be a systemic root cause





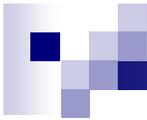
Conclusions of Board	Judgments of Need
<ul style="list-style-type: none">■ Designed location of electric cart acceleration pedal contributed to accident	<ul style="list-style-type: none">■ Install approved retrofit for electric cart accelerator
<ul style="list-style-type: none">■ Maintenance did not include periodic drive chain adjustment and other manufacturer recommendations	<ul style="list-style-type: none">■ Incorporate manufacturer's recommendations in maintenance processes
<ul style="list-style-type: none">■ JHA not performed■ Spotter activities no analyzed■ ISMS for use of carts insufficient	<ul style="list-style-type: none">■ Enhance JHA process■ Evaluate need for spotter activities





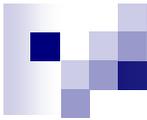
Conclusions of Board	Judgments of Need
<ul style="list-style-type: none">■ Training not provided by Training Department and not part of Qualification Card■ Qualifications for electric carts driver's not incorporated into Vehicle Safety Program	<ul style="list-style-type: none">■ Establish formal training and qualification process (ANSI B56.8 - 2006)
<ul style="list-style-type: none">■ Vehicle Safety Program requirements not incorporated for surface use■ Pre-operation and pre-use inspection not performed consistently■ JHA not performed	<ul style="list-style-type: none">■ Improve Vehicle Safety Program





Conclusions of Board	Judgments of Need
<ul style="list-style-type: none">■ Prior knowledge of pedal accelerator not identified as near miss	<ul style="list-style-type: none">■ Provide expectation to report routine safety occurrences through WIPP Form and close-call program
<ul style="list-style-type: none">■ Family Day creates additional issues and safety concerns	<ul style="list-style-type: none">■ Evaluate effects of Family Day
<ul style="list-style-type: none">■ WTS oversight not extended to safety and health programs and implementation work activity levels■ Corrective actions from past not fully reviewed for effectiveness■ Assessments of vehicle safety not part of oversight systems	<ul style="list-style-type: none">■ WTS enhance oversight program to meet requirements in DOE O 226.1A





Conclusions of Board	Judgments of Need
<ul style="list-style-type: none">■ CBFO not ensured WTS has credible oversight program■ Assessment of vehicle safety not part of CBFO oversight system	<ul style="list-style-type: none">■ CBFO improve contractor oversight program
<ul style="list-style-type: none">■ Overall emergency response executed in exemplary manner	<ul style="list-style-type: none">■ None
<ul style="list-style-type: none">■ Site readiness and accident scene preservation met intent of DOE O 225.1A	<ul style="list-style-type: none">■ None

