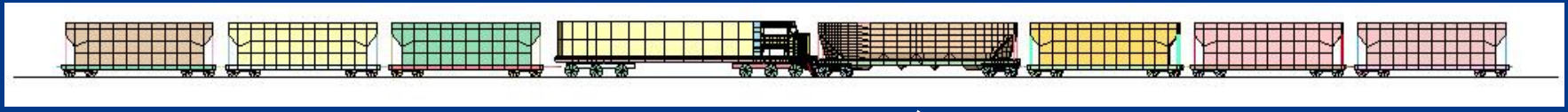
Locomotive Collision Test #4

Oblique, Offset Collision of a Freight Locomotive with a Loaded, Covered Hopper Car

Test #4: Set-Up



3 Loaded Hopper cars

Test Locomotive (SD-45, front end converted to SD-70)

Loaded, Covered Hopper Car

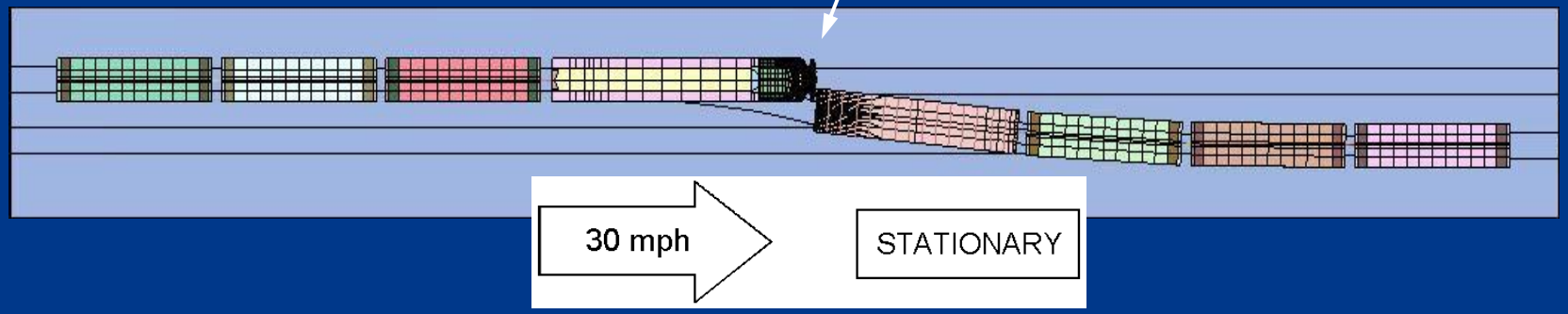
~30 Loaded Hopper Cars

Collision Speed - 30 mph

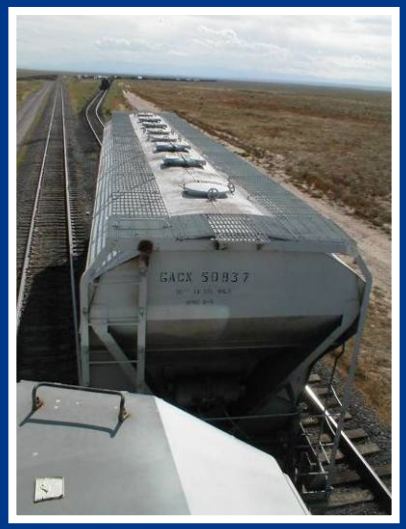
No. 10 Turnout, hopper overlaps locomotive by ~3 ft

Bullet Consist

Target Consist



Test #4: Pre-Test Photos



- Covered hopper overlaps locomotive by about 3 feet, but does not overlap the engineer's side collision post

Test #4: Post Test Photos

- Engineer’s side windshield corner post significantly damaged during the impact event

Test #4: Post Test Photos

- Locomotive front truck derailed
- Hood and end plate damaged

Test #4: Outcome

- What did we learn from this test?
  - Significant damage occurred to the windshield corner post area
  - This damage would be greater with a larger hopper to locomotive overlap or impact speed
  - Some hood and endplate damage also occurred
  - The locomotive's front truck derailed, while the rear truck remained on the track
  - Crew safety would be affected in this type of collision