Rail Industry Perspective on the Transportation of SNF

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Rail Industry perspective on the transportation of SNF

- Rail industry objectives
- Background
- Risk management Approach
  - Cask
  - Cask & car
  - Train
- Conclusion

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Rail Industry Objectives

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- Safe, efficient, integrated SNF rail transportation system
- "A dedicated cask/ car / train system that ensures cask integrity in the railroad operating environment and allows timetable speeds with no restrictions on meets or passes."

Background

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- 98% of SNF is planned for rail transport
- When SNF moves, it is estimated that it will mean approx. 250 to 450 casks per year

Carloads by commodity 1996

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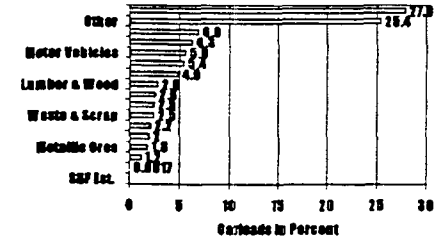

Source: Railroad Facts AAR 1997

Revenue by Commodity 1996

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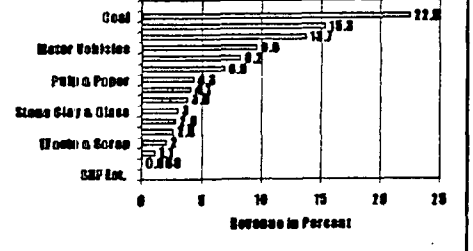

Source: Railroad Facts AAR 1997

Risk Management Approach

- To approach safe, efficient and "incident free" transportation, SNF must be treated as a system including:
  - Cask
  - Cask & Car
  - Train

Risk Management: Car Design

- Car design should reflect the highest design principals to:
  - Limit the probability of a derailment
  - Limit the damage to the cask in the unlikely event of a derailment
- Sufficient volume of SNF traffic is projected to support a small "fleet" of specially designed equipment

Risk Management: Car Design (cont.)

- Probability of a derailment can be limited by:
  - Selection of optimal suspension components and/or limited load range
  - Analysis of car design for known derailment modes
  - Programmed maintenance

Risk Management Car Design (cont.)

- Probability of cask damage in the event of a derailment can be limited by:
  - Design of the car to protect the cask by minimizing potential impacts

Risk Management: Train Design

- The "Dedicated Train" Concept
  - Minimizes weak link problem
  - Minimizes train handling forces

Risk Management: Train Design (cont.)

- Derailment prevention technology could be applied:
  - Electronic braking systems
  - On board defect detection systems
    - Overheated wheel & wheel bearings
    - Brake failure
    - Coupler failure
- Satellite tracking

Risk Management: Train Design (cont.)

- Dedicated trains minimize time in transportation
  - High priority scheduling
  - Bypass of classification yards
  - Fast acceleration
  - Higher sustained speeds possible
  - Quicker stopping
  - Armed escorts would be easier to provide
  - Inspection & maintenance easier to provide

Conclusion:

- Design the cask / car / train system to ensure safe, efficient transportation of SNF