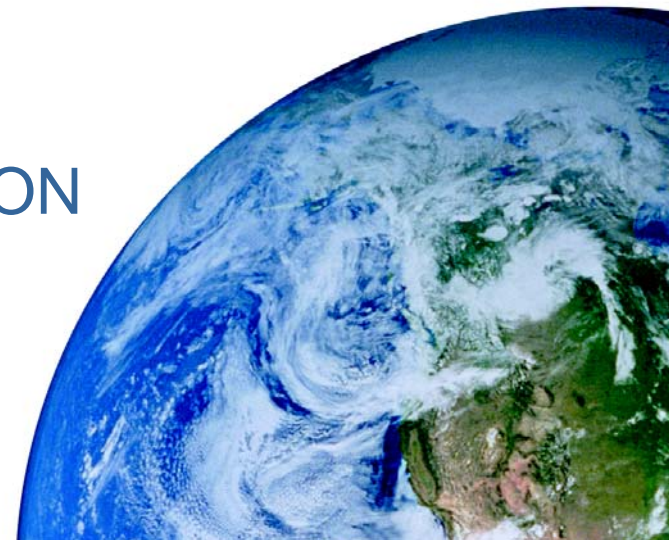


# Land Transport Issues for the Industry

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# Land Transport of RAM

- Unique Challenges in all countries
- Infrastructure in developing countries
- Public acceptance and perception – routing choices
- Common issues and challenges
- Rail – Acceptance - Stowage



# Overview of Road and Rail Industry in Canada and USA

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# Unique Nature of Road and Rail Transport in North America



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# Canada and USA Land Transport

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## Distances:

Halifax, NS to Vancouver, B.C. - 6,276 km  
(3,900 miles).

Miami, FL to Seattle, WA – 5,470 km (3,400  
miles).

Cross border transports – USA is Canada's  
Largest Trading Partner



## Road Carrier access – Stalemate – 16 years after NAFTA

- Mexican Carriers limited to 40 km (25 Miles) radius into the USA.
- Same restriction for US carriers into Mexico.
- Requires transfer of cargo or trailer interlining for cargo destined beyond.
- USA cites safety, drugs and immigration issues for this restriction.



# Canada and USA Land Transport

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Cabotage:

USA and Canada:

- A Canadian driver is not allowed to pickup and deliver a load within the USA.
- A US driver is not allowed to pickup and deliver a load within Canada.



# Road Carriers In North America

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## Road Weights:

### Canada:

- Canadian road weights for divisible loads are, in general, much higher than USA maximum road weights.
    - B-Train 39,460 kg (87,000 lbs appx.) cargo weight
    - 2 axle trailer 25,000 kg (55,000lbs appx.) cargo weight
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# Road Carriers In North America



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Road Weights:

USA:



- Unless a load is not divisible, the maximum GVW of a 5 axle unit is 80,000 lbs. (36,287 kg)
- This equates to maximum cargo weight of between 46,000 lbs. (20,865) to 52,000. lbs. (23,587 kg) depending on the weight of the tractor and trailer.
- There are some highways in the US that have exceptions to this that allows B-trains, etc. but if the unit is travelling any distance, the above is the norm.

# Road Carriers In North America

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## Driver Shortage:

- There has been and will continue to be a significant shortage of reliable, experienced drivers in North America.
- Young people are not entering the occupation in a similar number to a generation ago when post-secondary education was not so prevalent.
- North American trucking involves long distances which means the drivers are often not home for several days or even a couple weeks or more.
- Driver Turnover – 121%



# Road Carriers In North America

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## Financial Results:

- Most road carriers in North America operate on a very low margin of profit.
  - All fixed and variable costs continue to increase.
  - Driver salaries are being forced upwards.
  - Fuel price fluctuations are not fully recoverable with FSC.
  - 3% to 4% of revenue is considered a good margin for trucking firms.
  - Current difficult market has created financial difficulties with many carriers.
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# Rail Carriers In CANADA



# Rail Carriers In Canada

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- Rail across Canada can be very fast and efficient due to only two rail lines.
- Share the same tracks often.
- Vancouver – Montreal – 5 day service.
- Montreal to Halifax – CN only

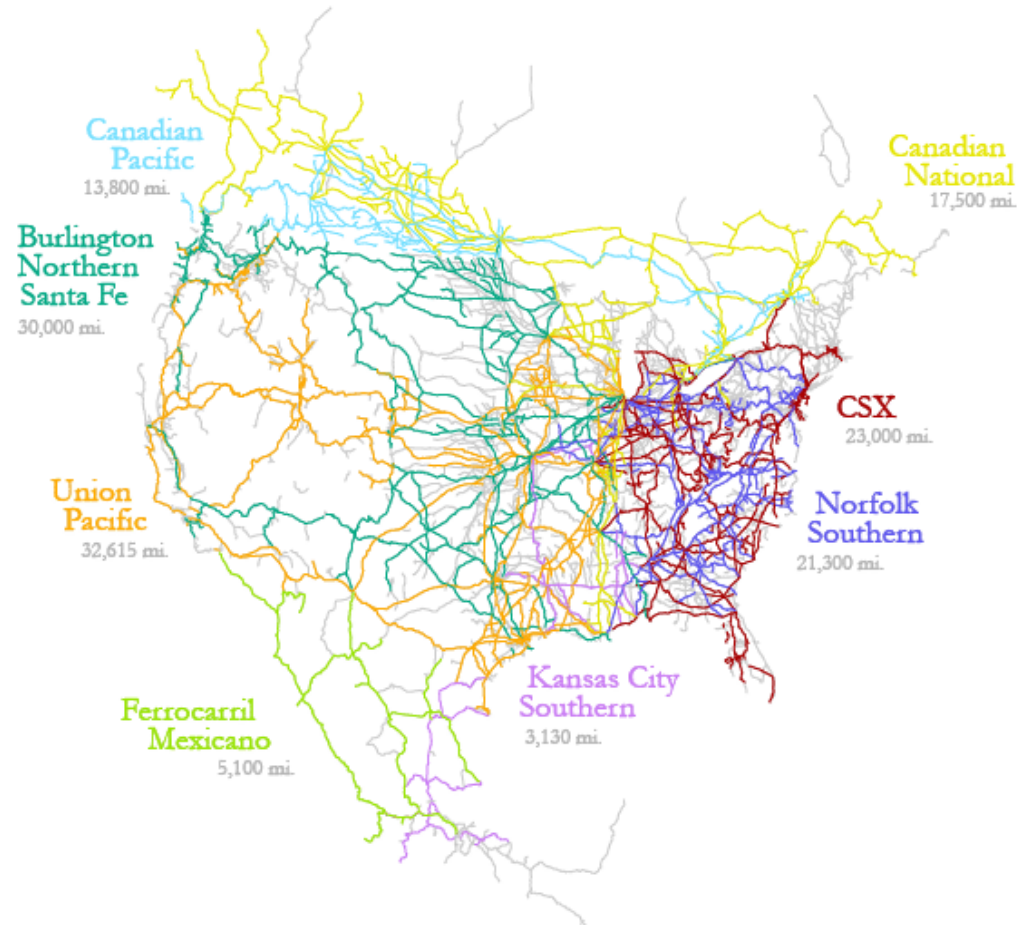


# Railway network In USA

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# Railway network In USA



# Rail Carriers In USA

- Shipping short distances by rail is usually not cost effective or practical. (road costs at each end)
- Shipping long distances often involves interlining with different rail carriers; some loss of control over the shipment and inefficiencies occur.
- Many of the tracks are operated by short line railroads that are aligned with one of the major carriers.
- The more interlining required, the higher the cost becomes.





# **Radioactive Materials Transports by Road and Rail**

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# RAM Rail Carriers In Canada

- CP Rail will accept RAM materials for shipment domestically.
- CN Rail will not accept most RAM.
- Neither rail carrier will accept southbound shipments of RAM due to entire train delays while authorities monitored containers.



# RAM Rail Carriers In USA

- The majority of radioactive waste is transported by rail within the USA. This is usually large quantity low level radioactive waste.
- Most rail carriers in the USA accept RAM. Often interline with short line railways.



# RAM Road Carriers In North America

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## Options:

- USA - Some well established and well known road carriers which are large enough to service most nuclear facilities in the USA.
  - Other small carriers that service specific regions or nuclear facilities.
  - Canada – Small number of regional carriers that service specific nuclear facilities.
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# RAM Road Carriers In North America

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## Road Carrier Qualifications:

- Canada and USA - No specific governmental permits required for carriers to transport radioactive materials.
  - USA - Must have a Federal Motor Carrier Safety Administration Hazardous Material Permit. (available to almost any carrier upon application).
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# RAM - Road Carriers In North America

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## Road Carrier Qualifications:

### Insurance USA – Third Party Liability–

- Minimum \$1,000,000. for RAM
  - Except for higher level RAM which are considered “Highway Route Controlled Quantities” and requires Minimum \$5,000,000.
  - Most reputable road carriers have liability insurance well in excess of the minimum required.
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# RAM Road Carriers In North America

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## Road Carrier Qualifications:

### Insurance - Canada – Third Party Liability–

- Note: Natural Uranium is not covered under standard insurance policies
  - Nuclear exclusion in Canadian Policies also excludes Natural Uranium.
  - Ensure carrier has endorsement for handling RAM on its insurance policy. (or cover by NIAC)
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# RAM Road Carriers In Canada and USA

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Driver Qualifications for RAM transport:

USA and Canada:

- Must have Hazardous Materials training as well as specific training for Class 7 Materials.
- Other than above, must have Government issued Driver's Licence applicable to the type of equipment they are driving.





# Road vs Intermodal (Road/Rail)

## – North America

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- ***Environmental “footprint” of the firm is improved.***
    - Railroads are more than three times as fuel-efficient as trucks. (Based on the American Association of Railroads energy efficiency statistics of over 400 short ton-miles per gallon of diesel fuel in 2004).
  - ***Increased transport safety.***
    - Significantly less rail accidents than road accidents.
  - ***Lower cost – longer distances – possible 40% less cost.***
  - ***Longer transit time – particularly in USA.***
  - ***More transfer of the cargo between modes and rail lines.***
  - ***Less direct control of the cargo***
  - ***Tie-down System must be stronger than road transport tie-down system***
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# **Nuclear Industry Experience with Road Transport in North America**

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# Road carriers - Availability

- **There are a number of North American road carriers that will transport radioactive materials.**
  - **There are a few carriers that specialize in RAM and also explosives for the DOD and DOE.**
  - **Radioactive materials shipments generate a higher rate per mile vs general commodities for the road carrier.**
  - **There is a lot of price competition between the carriers in order to obtain this business.**
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# Road carriers - Pricing

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- **Round trip shipments utilizing dedicated equipment is the easiest business for carriers to service.**
  - **Pricing is based on a per mile basis unless distance is very short and results in a flat day rate.**
  - **One-way shipments where the carrier has to look for return freight provide a lot of pricing variables.**
  - **How many miles will the unit have to run empty in order to pick up another load?**
-

# Risks involved – Road Transport

- **Road Transport is the highest risk mode of transport and produces the largest number of incidents related to transports of radioactive materials.**
- The long distances between points in North America vs. Europe (for example) creates more risk of incidents.
- As well, the snow, ice, fog and storms particularly in the north promote even higher risks in these areas.



# Emergency Response

## USA – In most cases, the emergency number on the Bills of Lading is Chemtrec.

- CHEMTREC® was established in 1971 by the chemical industry as a public service hotline for emergency responders, such as fire fighters and law enforcement, to obtain information and assistance for emergency incidents involving chemicals and hazardous materials.
  - Basic Registration with CHEMTREC® authorizes the Registrant to use the CHEMTREC emergency phone number on shipping documents where the origin and/or destination is in the United States or Canada.
  - *Only companies registered with CHEMTREC are authorized to use the CHEMTREC emergency telephone number on their shipping documents and MSDS. Companies and entities that use the CHEMTREC number on their shipping documents without registering with CHEMTREC are subject to significant government fines and penalties.*
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# Emergency Response

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## Canada:

If the shipper or receiver of the Dangerous Goods is located in Canada, they must have a Transport Canada approved Emergency Response Assistance Plan (ERAP) in place for the specific commodity. Their ERAP will be the one that is utilized in the event of an incident. Bills of Lading must state the ERAP number and the Emergency Response phone number.

If the Dangerous Goods are transiting Canada by land, a Canadian firm or citizen must have a Transport Canada approved Emergency Response Plan in place for the specific commodity. This can be the carrier, agent, transporter in the case of RAM transiting Canada.

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# Lessons Learned

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# Mitigation of risks:

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- Selection of Road Carriers
    - Industry experience and reputation.
    - Safety and Quality Audit
      - Experienced auditor with extensive knowledge of road carrier operations and regulations.
      - US - published Safety Analysis Report
    - Insurance Coverage
    - Continuing experience with the carrier.
  - Utilization of the same drivers whenever possible.
  - Routing of shipments utilizing shortest reasonable route and avoiding high population areas whenever possible.
  - Be prepared to respond quickly and appropriately to any accident or incident.
-

# Dealing with Road Carriers

- Security of Supply - There does not appear to be a shortage of qualified carriers for RAM in most of Canada and USA.
- Be prepared to pay a premium for carrier to transport RAM –
  - More willing to take the extra time needed to ensure that all procedures are complied with.
  - Provision of reliable, experienced drivers costs the carrier more.
  - Nuclear industry's expectation of drivers is much higher than the expectations of the general trucking industry.
    - Search of vehicles including personal bunks which are the drivers' homes.
    - More often stopped or inspected by DOT, TC due to radioactive placarding.
    - Nuclear facilities react very strongly to any infraction on their facility and expect drivers to perform to the high standards of the facility.
    - Incidents and accidents are very high profile and when one occurs, the authorities will be extremely thorough in determining whether all due diligence has been performed.
  - Carrier management must be prepared to respond quickly and properly to any incidents, accidents or problems.



# When something does happen?

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- You can make all the right choices and still something can happen.
  - When that does, if you haven't done your due diligence along the way, that will likely come back to haunt you.
  - The proof of whether you have made the right choices comes when the worst case scenario occurs and everyone performs as they should perform.
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# Land Transport Issues for the Industry

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