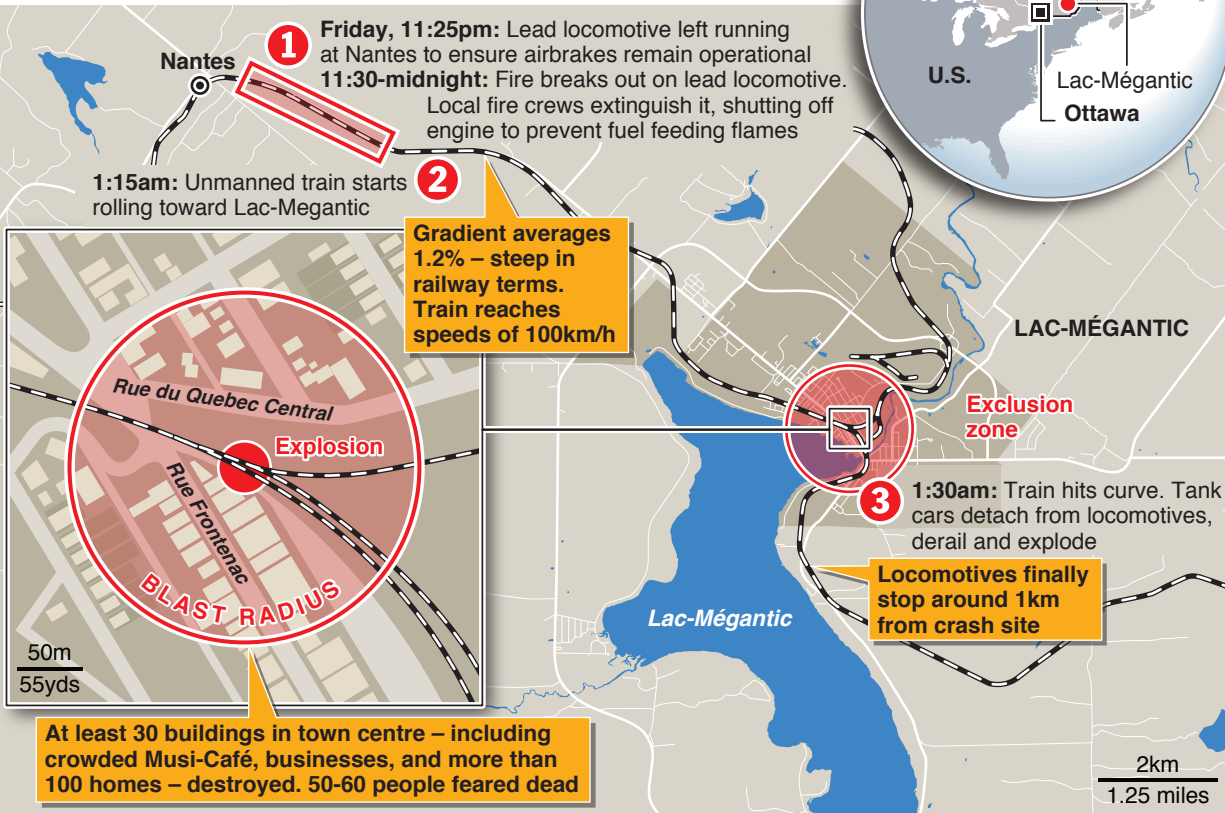


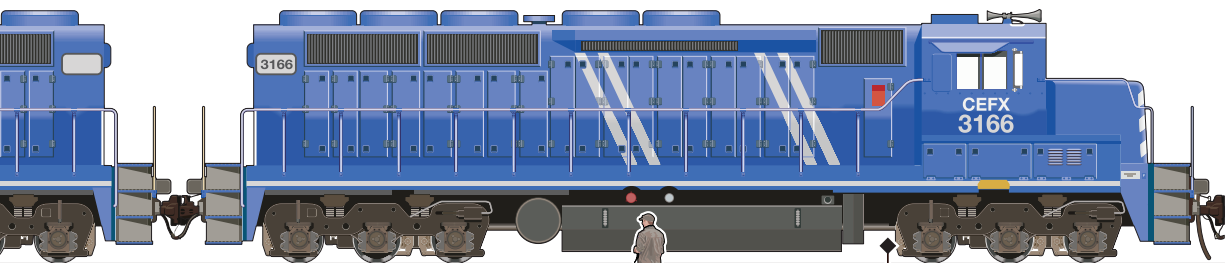
Disaster risk of oil transport by rail

The runaway freight train which devastated the Quebec town of Lac-Mégantic has focused attention on the use of rail to transport oil. Five years ago, fewer than 10,000 carloads of crude were carried by rail in the U.S. and Canada; last year this rose to nearly 250,000 carloads – about seven billion gallons



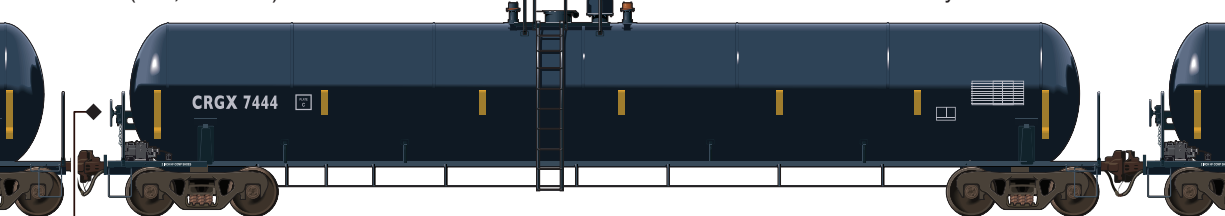
Unit train: Made up of five locomotives pulling 72 crude oil tank cars. **Train has air brakes, hand brakes, and “deadman’s switch” designed to prevent runaways**

Procedure for parking loaded trains: Stop train, apply hand brakes on rail cars – rule of thumb is 10% of number of cars plus two. Release air brakes and test hand brakes by pulling against cars with locomotive. **This ensures that if air brakes fail, train will not move**



Rail tanker cars: Each can carry up to 730 barrels (115,000 litres) of crude oil

Air brakes: When engine shuts down, leakage of air out of brake cylinders releases brake



Handbrakes: Located at rear of each car. Large wheel is turned manually to lock wheels of car

Tanker cars built to DOT-111A standard: Do not have double shells or shields of cars used for propane, and so are more likely to rupture and leak in event of derailment