

Point of View

# MEETING THE CRUDE OIL SAFETY CHALLENGE

## AUTHORS

David Lehlbach

David Hunt

The rapid expansion of crude-by-rail haulage is creating a range of new challenges for North American railroads. Among the most critical is the need to quickly address safety issues that have come to light as a result of serious accidents involving Bakken crude oil.

Crude-by-rail safety issues were recently highlighted at a meeting between the Secretary of the US Department of Transportation and the railroad and oil industries, in mid-January 2014. As a result of this meeting, the railroad industry committed to several 30-day initiatives to rapidly improve the safety of crude oil haulage. This paper briefly summarizes Oliver Wyman's perspectives and approaches with regard to these short-term initiatives, as well as likely longer-term strategic needs.

## RAPID HAZMAT LANE EVALUATION

In 2008, the US Department of Transportation enacted a rule that required railroads operating in the US to inform the USDOT which routes were being used to transport hazardous materials. Oliver Wyman worked closely with several Class I railroads at the time to adapt its MultiRail® network planning software – which is widely used by US railroads – to provide all of the analytics needed to comply with the new rule. The result: an interrelated suite of tools that can be used to rapidly generate and evaluate hazmat lanes – including those used to move crude oil.

Specifically, using operating plans contained within MultiRail, alternative routes can be generated that are operationally feasible and take into account existing or planned trains operated by the railroad. This route generation process is simplified by displaying “real world” routing options that fit within the operational parameters of a railroad’s transportation plans.

The alternative to this software-driven method – simply selecting the lowest-risk path as a substitute route for hazmat-loaded railcars – does not take into account the actual feasibility of rail operations on the route and may indicate a “false” risk level, i.e., one that is lower than can realistically be achieved.

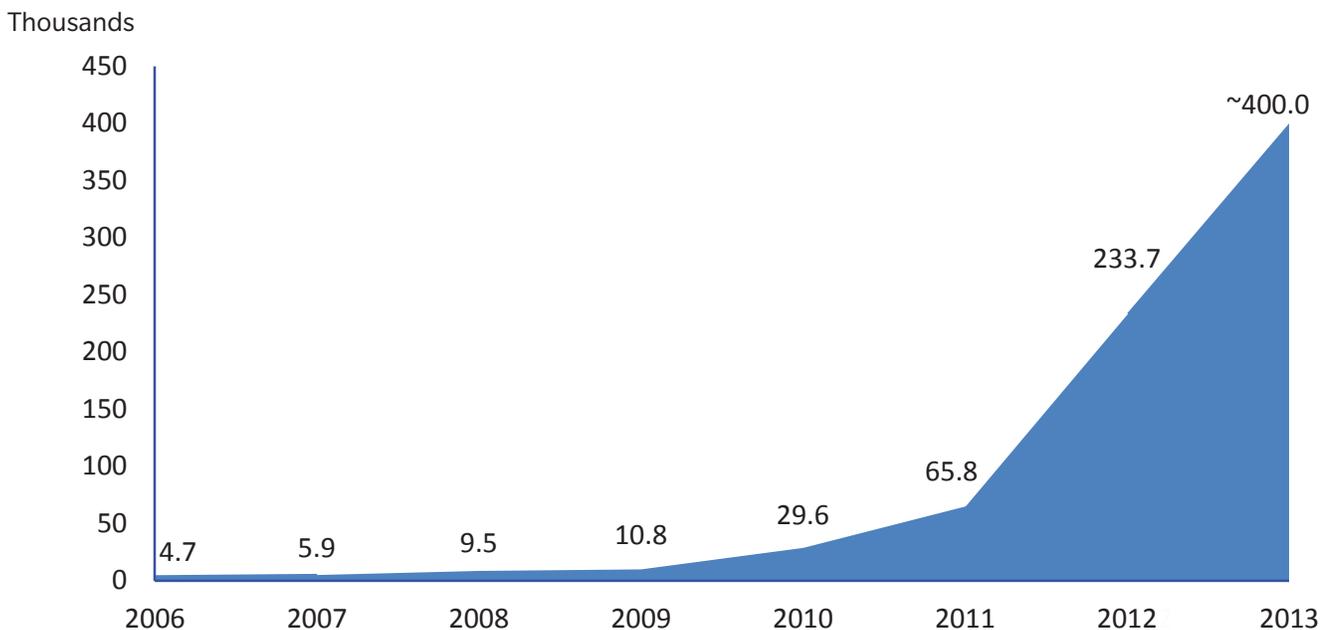
The USDOT has now asked railroads to rapidly identify rerouting options to keep crude oil trains out of high-risk areas – Oliver Wyman’s MultiRail software can support this requirement, as well as provide the ongoing analytics to continue assessing routings as crude oil traffic expands and new crude oil traffic lanes are developed.

## NETWORK ANALYSIS FOR SPEED REDUCTION AND LOCOMOTIVE PLACEMENT

In addition to looking at how crude-by-rail safety can be improved through rerouting, railroads have agreed with the USDOT to undertake two other analyses: identifying areas where speed reductions should be imposed, and determining locations where additional locomotives could be placed to help prevent derailments.

Key factors that must be considered when evaluating potential locations for speed reduction include past incidents, network congestion, population density, and whether an area is environmentally sensitive. For the analysis of the best locations for additional locomotives, the rate of past incidents; engineering considerations such as track type, grade, and curvature; and the presence of passenger trains would be among key data elements to consider.

EXHIBIT 1: ORIGINATED CARLOADS OF CRUDE OIL ON US CLASS I RAILROADS, 2006-2013



Source: Association of American Railroads, “Moving Crude Oil by Rail,” December 2013. Thousands

Both of these analyses can be quickly completed using MultiRail's rail network and train database as a basis for decision making. In fact, these analyses would start with an evaluation of the characteristics of the lower-risk routes generated in the previous hazmat routing analysis described above.

## PROCESS STRATEGIES FOR HAZARDOUS MATERIALS ANALYSIS

To lower the likelihood of accidents over the long term, railroads must develop specific operational processes to route crude oil cars through the network that will minimize the risk of fatalities and damage in the event of an accident. Such processes must be standardized and repeatable, and need to consider the potential to regularly execute the plan, route engineering, condition of the physical plant, expected service performance for all customers, costs, and dependability of the plan. Using a combination of process tools and MultiRail operating plan data, the Oliver Wyman rail team can assist in developing repeatable processes that yield long-term success in serving customers safely.

In addition, legal input should be sought to ensure processes are transparent and sufficiently documented, so that railroads are better able to defend the decisions of their staff in the face of either inside or outside scrutiny.

## RISK ANALYSIS OF CRUDE OIL HAZMAT-RELATED CHANGES

The short-term changes requested by USDOT will act as a "risk multiplier" for crude-hauling railroads. As an example, a reduction in crude oil train speeds will mean that more cars will be needed to carry the same amount of crude; these added cars in turn may slow the velocity of the entire network, consume more locomotive and crew hours, and increase costs.

The Oliver Wyman rail team has significant experience in North America and worldwide helping railroads understand and mitigate a wide range of risks. Oliver Wyman also can provide perspectives on insurance risks through our sister company Marsh, one of the world's largest re-insurance providers.

## MULTIRAIL AND THE OLIVER WYMAN RAIL TEAM

MultiRail has been used by the rail industry for more than two decades to build operating plans in North America and around the world. The goal of MultiRail is to be a single-source railroad strategic planning application. As a result of this underlying strategic vision, the MultiRail software suite has been fully tested and utilized in real-world day-to-day planning and in special strategic studies.

The Oliver Wyman rail team includes senior managers with hands-on rail experience, technical consultants, government affairs and rules experts, and rail software developers, all of whom contribute to the breadth and depth of Oliver Wyman's rail industry expertise.

For further information about how Oliver Wyman can assist you with crude oil safety planning, please contact your Oliver Wyman representative or the rail team via [kevin.foy@oliverwyman.com](mailto:kevin.foy@oliverwyman.com) or +1-609-520-2182.

## ABOUT OLIVER WYMAN

With offices in 50+ cities across 25 countries, Oliver Wyman is a leading global management consulting firm that combines deep industry knowledge with specialized expertise in strategy, operations, risk management, organizational transformation, and leadership development. The firm's 3,000 professionals help clients optimize their businesses, improve their operations and risk profile, and accelerate their organizational performance to seize the most attractive opportunities. Oliver Wyman is part of Marsh & McLennan Companies [NYSE: MMC]. For more information, visit [www.oliverwyman.com](http://www.oliverwyman.com).

For more information, please contact our practice heads directly:

[Bill Rennieke, Boston](#)

[bill.rennicke@oliverwyman.com](mailto:bill.rennicke@oliverwyman.com)

[Jeffrey Elliott, Princeton](#)

[jeffery.elliott@oliverwyman.com](mailto:jeffery.elliott@oliverwyman.com)

[Rodney Case, Princeton](#)

[rod.case@oliverwyman.com](mailto:rod.case@oliverwyman.com)

[www.oliverwyman.com](http://www.oliverwyman.com)

<http://blog.railplanning.com>

Copyright © 2014 Oliver Wyman. All right reserved. This report may not be reproduced or redistributed, in whole or in part, without the written permission of Oliver Wyman and Oliver Wyman accepts no liability whatsoever for the actions of third parties in this respect.

The information and opinions in this report were prepared by Oliver Wyman. This report is not investment advice and should not be relied on for such advice or as a substitute for consultation with professional accountants, tax, legal or financial advisors. Oliver Wyman has made every effort to use reliable, up-to-date and comprehensive information and analysis, but all information is provided without warranty of any kind, express or implied. Oliver Wyman disclaims any responsibility to update the information or conclusions in this report. Oliver Wyman accepts no liability for any loss arising from any action taken or refrained from as a result of information contained in this report or any reports or sources of information referred to herein, or for any consequential, special or similar damages even if advised of the possibility of such damages. The report is not an offer to buy or sell securities or a solicitation of an offer to buy or sell securities. This report may not be sold without the written consent of Oliver Wyman