

Valero Crude by Rail Project
Public Comments received DEIR Public Review Period
July 3, 2014- July 10, 2014 (4:00 p.m.)

Commenter	Date Received
Individuals	
James E. Lessenger	3-Jul-14
Nicholas Piano	7-Jul-14
Elisabeth Robbins	7-Jul-14
Paul Modjesky	7-Jul-14
George Maichel	7-Jul-14
George Whitney	7-Jul-14
Barbara Pillsbury	7-Jul-14
Errol Dely	7-Jul-14
Sabrina Yates	7-Jul-14
David Macdonald	7-Jul-14
Roger Straw	7-Jul-14
Marty Gustafson	7-Jul-14
Jelayn Sansone	7-Jul-14
Helen Loewenstein	7-Jul-14
Monique Boyer	8-Jul-14
Sam and Mary Hammonds	8-Jul-14
Peter Ofarrell	8-Jul-14
Alfonso Aguilera	8-Jul-14
Dave Frank	8-Jul-14
Don Stock	8-Jul-14
Ed Yarbrough	8-Jul-14
Maureen Carroll	8-Jul-14
Ella Marie Kallios	9-Jul-14
Michael Karsh	9-Jul-14
David Jenkins	9-Jul-14
Roger Straw	9-Jul-14
Kenneth and Catherine Bocox	9-Jul-14
Jeffry Lord	9-Jul-14
Gail Stock	9-Jul-14
Andrew F. Siri	9-Jul-14
Jack Bethards	10-Jul-14
Tom Lam	10-Jul-14
Linda Birse	10-Jul-14
Billie Bowden	10-Jul-14
Jennifer Thornton	10-Jul-14
Marc Lancet	10-Jul-14
Jim Minkel	10-Jul-14

JAMES E. LESSENGER, MD

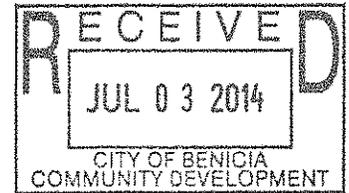
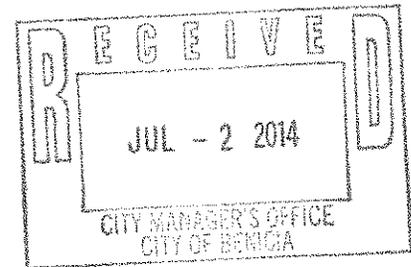
750 WEST K ST.

BENICIA, CA 94510

707.751.0289

FAX: 707.751.0857

AGBOOK@LESSENGER.NET



June 30, 2014

City Council and Economic Development Commission

City of Benicia, California

Hand delivered

Re: Valero Crude by Rail Project

Dear Ladies and Gentlemen,

This letter is written in support of the proposed Valero Refinery crude by rail (CBR) project.

I have a unique perspective on the issue for two reasons:

1. I am a board certified Occupational and Environmental Medicine physician. Having researched, written, and taught in the field, I have studied many industries in detail, including railroads and oil refineries. Therefore I have first-hand knowledge of both industries.

2. I have done a lot of research and writing on the former Benicia Arsenal and the conversion of the Arsenal into a three thousand acre industrial park.

I have six reasons for supporting the CBR project. They are as follows:

1. The project lies in the middle of a three thousand acre industrial park.

The proposed project is surrounded by a buffer area of industries and vacant land. The rail lines skirt the city before crossing the Carquenez straits to the south or the rim of the Suisun Marsh to the Northeast.

The land is in an industrial park. When the park was established in 1965, the city officials who created it, James Lemos, John Bohn, and Michael Fitzgerald, made a promise to the industries and businesses that occupied it that it would continue to be used for industrial purposes. Facilities to handle oil deliveries and refine them was one of the contemplated uses of the park when it was developed.

When the Arsenal closed and before the refinery came into the industrial park, Benicia was in a state of economic disaster. The refinery changed all of that.

2. Valero owns the property and should be allowed to do what is necessary to improve it and benefit their business.

Property ownership rights are an important aspect of our culture in the United States. The refinery is planning to improve their property so as to increase its efficiency and they should be allowed to do so.

3. The project will not affect the environment.

There will be no change in the through-put of the refinery and no change in the current levels of discharges or production. Discharges of pollutants from transportation will be decreased.

4. The project will be safe.

From my personal knowledge and experience, I know that safety is the primary task of both the refinery and the railroads. I have personally seen that safety is more important than production or profits in both industries. There is a culture of safety in both industries to protect both the workers and the communities they are located in. This culture includes engineering, training, equipment, and procedures designed to enhance safety.

The refinery readily admits that there are risks to what they do. They also describe their job as managing risks to produce a product that we all use. A product that this country is dependent on. Maybe someday that dependency will change, but not in the near future and certainly it won't be changed by limiting the refinery's ability to bring in crude oil by rail. It is through the culture of safety that these industries manage risk.

In addition to safety mechanisms, the refinery and railroad have sophisticated disaster response teams that in the past have been used to assist the community fire department.

Highly volatile and dangerous materials have been carried on the rails through Benicia and across the bridge to Martinez and beyond for over a century. The Union Pacific tracks that will be used are "Class A" and must carry anything that a shipper wants to ship. They ship tons of material each day without mishap.

There are risks to everything that is done by every person on every day. To draw a comparison: Every year in this country there are children who are abused by teachers, but that is not a reason to stop sending children to schools. It is, however, a reason to improve the culture of safety in our schools.

A culture of safety is what Valero and Union Pacific have done to make the transportation and refining of products safer.

5. The CBR project makes economic sense for Benicia and for the nation.

The CBR project will provide to the Valero refinery more versatility in what types of crude it can purchase and more negotiating power in the purchase price. This means a stronger company. The refinery will hire more workers on both a temporary and permanent basis and will be more competitive in the fuels markets. The improvement in competitiveness and increased profits means that the largest employer and tax payer in the city will remain in the city.

On a national basis, the CBR project is another step in oil independence for America. By purchasing oil from fields in the United States, Valero will decrease dependence on foreign oil and decrease the balance-of-payments problem our country faces. The decrease on foreign oil will decrease our involvement in Middle Eastern politics.

6. The Valero refinery has been a good friend to Benicia.

The refinery employees are engaged in community service projects. The refinery management is very liberal with donations to non-profit organizations throughout the city and area. The refinery employees, management and owners don't deserve the criticism leveled at them.

In summary, I recommend a yes vote for the Valero crude by rail project.

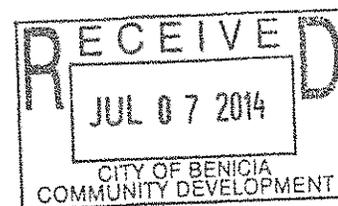
Kind regards,

A handwritten signature in cursive script that reads "James E. Lessenger, MD". The signature is fluid and includes a decorative flourish at the end.

James E. Lessenger, MD

Amy Million - I Support Valero Crude by Rail

From: Nicholas Piano <nick@allamericanelevator.com>
To: <amillion@ci.benicia.ca.us>, <bkilger@ci.benicia.ca.us>
Date: 7/3/2014 12:46 PM
Subject: I Support Valero Crude by Rail
CC: <info@beniciabr.com>



I support the expansion of Valeros deliveries of crude by rail. I do not support members of a city government that attempt to stifle a business that has provided so much to our community.

Beside the taxes that Valero pays to The City of Benicia, and the jobs they provide to our community they do many other things "behind the scenes" to support our community. Our daughter was tutored at the middle school, at no charge, by Valero employees who are organized and staffed by Valero. Valero donated over 500k to community groups including The Benicia Education Foundation, and Reach Out Benicia. Valero helped in the launch of the 2-1-1 program to connect residents to community services. Valero donates to the local food banks, blood drives, donates over 15,000 hours toward community service, adopted 45 adults and 81 children during the holidays to provide food, gifts, and other items.

What other business in Benicia provides so much? Can the City replace these services if Valero vanished, or reduced their services tomorrow? Can the City make up for the 25% deficit of the general fund? Can the City make up for the 13.7M given to area charities?

What would happen if Valero left, or scaled back its operations? We can look to the neighbors on our west for a good example of that....Personally, I like the wild west mentality of Vallejo since big industry disappeared, or was denied entry by their city government. Will I make it home alive? How many gun shots will I hear tonight? Will my kids make it home safe? Will a bankrupt city government and lack of emergency services mean the police or fire department will make it to me in time to save my life? Will my house drop 80% in value because I am surrounded by homeless squatters? All of the above scenarios are life experiences that Benicians currently miss out on, and I have to tell you they don't know what they are missing! Where's the excitement in knowing our city is well funded, and emergency responders are right around the corner? It really doesn't promote a sense of independence and self reliance for our residents.

All sarcasm aside, Valero is a good community member, and we are lucky to have them. Some people will just never recognize this until it's too late, and then they will be the first people complaining about the lack of revenue and city services. Our city should thank Valero, and be supportive in their future endeavors.

Thank You,

Nicholas Piano
 All American Elevator Company, Inc.

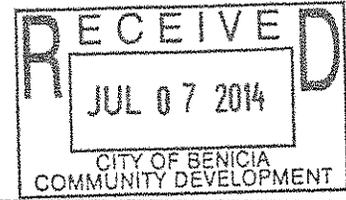
Main: 1-(877) 653-5123
 Cell: (510) 773-8043
 Fax: (707) 863-7368
 E-mail: Nick@AllAmericanElevator.com

Web: www.AllAmericanElevator.com

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Amy Million - Valero CBR Project

From: Elisabeth Robbins <robbinse13@gmail.com>
To: <amillion@ci.benicia.ca.us>, <bkilger@ci.benicia.ca.us>
Date: 7/4/2014 9:04 AM
Subject: Valero CBR Project
CC: <info@beniciaCBR.com>



I am wiring to oppose rail expansion for the Valero plant. At a time when the nation must move away from our dependence on fossil fuels, such an expansion is unwarranted. We cannot afford to continue to invest in outmoded technology. Sending crude oil by rail is dangerous to the American public. Tearing up Canada to obtain low grade oil is too destructive to the environment for us to continue this course. No matter how clean a refinery's production methods become, they will still be producing fossil fuels which add CO2 to the atmosphere, bringing on global warming. We can no longer ignore this danger and must limit our CO2 production.

Instead of further investment in crude oil, our nation must move toward greater use of clean renewable sources of energy. Companies like Valero can lead the way through their investment in new energy sources such as wind and solar. A revenue neutral carbon fee and dividend would enable our nation to move to a clean energy future at much less cost than if we wait until the last minute, when our carbon budget has been entirely spent.

Elisabeth Robbins, PhD
150 Freeman Street
Woodland, CA 95695

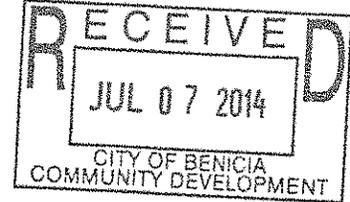
From: Paul Modjesky <modjesky@gmail.com>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>, "bkilger@ci.benicia.ca.us" <bkilger@ci.benicia.ca.us>
Date: 7/4/2014 9:36 AM
Subject: Support for crude by rail

I wanted to take a moment to let you know how I feel about Valero and its crude by rail project.

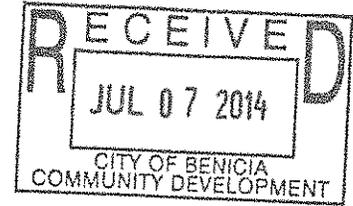
I support more local jobs.
I support more local construction projects.
I support less foreign oil by refining American oil.

I support the crude by rail project!

Paul



From: George <sacsdogs@sbcglobal.net>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>
CC: "info@beniciabr.com" <info@beniciabr.com>
Date: 7/3/2014 1:44 PM
Subject: Valero's crude by rail project



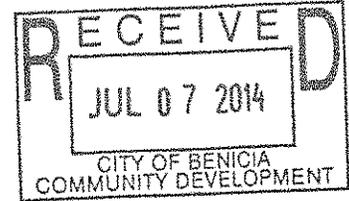
I reside at 374 McAllister Drive, less than a mile from the refinery. After reviewing the environmental impact report, I am satisfied that Valero can successfully implement this project and continue to be an asset to our community. I am particularly impressed with the reduction in tanker deliveries and the reduction in pollution globally associated with the long haul from the Middle East to Benicia.

Thank you for considering my endorsement when you provide your recommendation.

George Maichel
707.315.0289

Amy Million - Benicia Crude by Rail

From: George Whitney <gbwhitney@att.net>
To: Brad Kilger <Brad.Kilger@ci.benicia.ca.us>
Date: 7/4/2014 2:21 PM
Subject: Benicia Crude by Rail
CC: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>



I have been out of town and not able to attend any of the above subject meetings but I feel strongly that the people complaining about Valero bringing in crude by rail are very narrow minded.

There are enough hazard and environmental controls in our state to cover this operation and Valero is not looking to violate environmental laws.

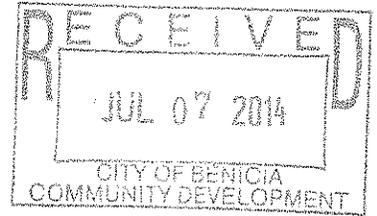
We should however, consider daytime movements of rail not to cause auto/truck congestion throughout the industrial park.

Valero contributes a lot to our community and we should not hinder their need to operate competitively.

I am a 39 year resident of Benicia and have no ill feelings about this good neighbor, the Refinery.

George Whitney, 745-4891

July 5, 2014



Re: Crude Shipments by Rail

Planning Commission Members
City Council Members

To Whom it May Concern:

I am submitting this letter regarding Valero Rail Plan (Crude Shipments by Rail). I am a 35-year resident of Benicia.

I am very troubled regarding the high risks of spills or explosions in populated areas. This can be disastrous, costing lives, damaging property and harming the environment, as mentioned in the Benicia Herald, topic "Regulations," dated Wednesday, July 2, 2014.

I implore all involved within Benicia city government not to push this through without thoroughly reading the complete DEIR and examining the thirteen (13) rail oil spill/fire accidents that have occurred across our country and Canada within the last year to determine what safety measures are necessary.

I thank you, in advance, to your attention regarding this matter.

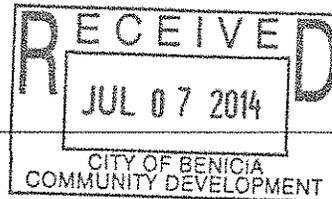
Sincerely,

A handwritten signature in cursive script that reads "Barbara Pillsbury".

Barbara Pillsbury
328 Sunrise Court
Benicia, CA

Amy Million - Valero CBR Project

From: Errol Dely <ebdely@yahoo.com>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>, "bkilger@ci.benicia.ca.us" <bkilger@ci.benicia.ca.us>
Date: 7/4/2014 4:59 PM
Subject: Valero CBR Project
CC: "info@beniciaCBR.com" <info@beniciaCBR.com>



Dear Amy and Brad,

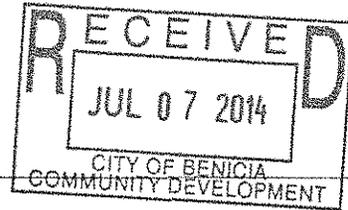
My wife and I strongly support the Valero Crude-by-Rail Project as it will reduce emissions in Benicia and the surrounding area.

Best regards,

Errol Dely

Amy Million - Valero Crude By Rail Comments

From: "Sabina Yates" <redfoxred@earthlink.net>
To: AMillion@ci.benicia.ca.us
Date: 7/5/2014 11:22 AM
Subject: Valero Crude By Rail Comments
Attachments: 2014-7-5 Crude-by Rail DEIR.docx



Amy Million, Principal Planner, Community Development Dept.
Benicia City Hall
250 East L Street
Benicia, CA 94510

Dear Ms Million,

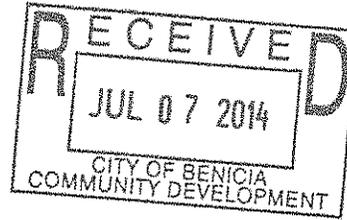
The Benicia Herald headline from 6/18/2014 stated: "Significant" impact to air quality from crude by rail. . . long awaited environmental impact report dismisses some concerns over Valero proposal, but says effect on area air would be 'unavoidable'.

Is it necessary for Benicians to accept significant and unavoidable reductions in air quality (with the predictable increases in asthma, heart and lung consequences) for its citizens so that Valero can continue to operate?

What will be the legacy we leave for the children of Benicia?
A town with healthy priorities (our air quality, parks and superb educational facilities) or increased air pollution and its consequential health impacts? OR; even a vacated Valero site – a possible local liability and responsibility – or a Super Fund site?

Sincerely,

Sabina Yates
302 Bridgeview Ct.
Benicia, CA 94510
redfoxred@earthlink.net
(707) 746-6428



July 5, 2014

Marc Ethier, Editor
beniciaherald@gmail.com

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"Significant" impact to air quality from crude by rail. . . long
awaited environmental impact report dismisses some concerns
over Valero proposal, but says effect on area air would be
'unavoidable'.

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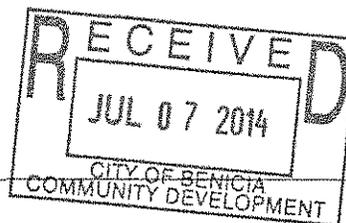
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A town with healthy priorities (our air quality, parks and superb
educational facilities) or increased air pollution and its
consequential health impacts? OR; even a vacated Valero site
– a possible local liability and responsibility – or a Super Fund
site?

Sincerely,

Sabina Yates
302 Bridgeview Ct.
Benicia, CA 94510
redfoxred@earthlink.net
(707) 746-6428

Amy Million - Fwd: Valero Crude by Rail DEIR

From: Brad Kilger
To: Amy Million
Date: 7/5/2014 11:34 AM
Subject: Fwd: Valero Crude by Rail DEIR



>>> David Macdonald <dmmacdonald@att.net> 7/5/2014 11:14 AM >>>
1404485023644_47983 class=yiv9498597293yui_3_16_0_1_1404485023644_47959 style="FONT-SIZE: 10pt; FONT-FAMILY: bookman old style, new york, times, serif; COLOR: #000; BACKGROUND-COLOR: #fff">Mr. Kilger,

First, I would like to state I have no ties to Valero. I did work for a major competitor as a refinery equipment inspector and design engineer for 34 years (currently retired). I have a lot of knowledge and experience of oil refinery operations, operating equipment, wharf facilities, plant maintenance, and plant upgrade projects. I executed many ground floor environmental projects for my employer in the 1980's. I can tell you that California oil refineries are subject to the strictest environmental standards in the world, and they also rank world class in energy efficiency.

This project is a win for the environment, Valero, the City of Benicia, and America by refining domestic crude oil vs. foreign. The risks of this project are low to the point of being remote. The opponents to this project are acting hysterical, and they obviously have no concept of the risks of crude oil supplied by ship or the multitude of risks of running a large refinery which dwarf the risks of rail car shipment.

What the opponents of this project really represent is a larger anti-fossil fuel agenda coupled with NIBY. I find it odd that these opponents chose to move into a refinery town when they seem so anxious and concerned about the risks and pollution. They share the same attitude of those people who move next door to an airport and then have the audacity to complain about the noise and the pollution. Oddly, these anti-fossil fuel activists fail to grasp how their high standard of living is entirely based on fossil fuel consumption. Something odd happens when a society obtains affluence, it starts killing the geese that lay the golden eggs.

The key to this project are to mitigate the risks, however small. No technology developed by man is perfect, so risks have to be identified, quantified, and mitigated. That includes rail infrastructure upgrades, tank car design upgrades, and spill response plans. All of these mitigation's are well understood and it is a simple matter of having an implementation plan and schedule.

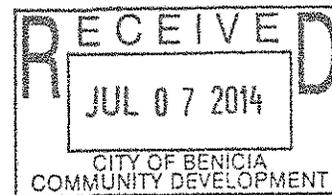
I fully support this project as in the best interests of the City of Benicia. Let us not kill the goose that lays the golden egg for our city.

Sincerely,

David Macdonald
798 Hall Court
Benicia

Amy Million - FW: Interactive OES map, "Rail Risk and Response"

From: <rogrmail@gmail.com>
To: "Amy Million" <amillion@ci.benicia.ca.us>
Date: 7/5/2014 5:43 PM
Subject: FW: Interactive OES map, "Rail Risk and Response"
CC: "Brad Kilger" <bkilger@ci.benicia.ca.us>
Attachments: image001.jpg



Amy – please add the article below by Curtis Tate of the Sacramento Bee to the public record for Valero Crude By Rail, and distribute it to the Planning Commission and City Council. The map of “Rail Risk and Response” by our Governor’s Office of Emergency Services (OES) is a detailed wake-up call. The City should require that all recommended Federal and State safety and regulation measures are in place and operational before Valero is allowed to bring in crude by rail.

(Note that the small map shown below is NOT the State’s interactive map. The interactive map is on the OES website at <http://california.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=928033ed043148598f7e511a95072b89>. I would encourage all City staff, electeds and appointees to check out the interactive map.)

Roger Straw
 Benicia Independent
www.BeniciaIndependent.com

BAKKEN CRUDE, CALIFORNIA REGULATION, CRUDE BY RAIL, EMERGENCY READINESS & RESPONSE, FUNDING FOR EMERGENCY RESPONSE

NEW MAP SHOWS CALIFORNIA EMERGENCY TEAMS NOT IN BEST POSITION FOR OIL TRAIN RESPONSE

JULY 5, 2014 <http://beniciaindependent.com/wp/new-map-shows-california-emergency-teams-not-in-best-position-for-oil-train-response/>

Repost from [The Sacramento Bee](#)

[Editor: This interactive OES map, "Rail Risk and Response" is an incredibly detailed resource - as you zoom in, additional features appear. Hazards shown on the map include geologically unstable areas, proximity to dense population centers, proximity to waterways, schools and hospitals, pipelines, sensitive species or habitat, etc. The story in the Sacramento Bee does not contain a link to the map. Here's the [intro page](#) for the interactive map. And here's [the map itself](#). - RS]

New map shows California emergency teams not in best position for oil train response

By Curtis Tate, McClatchy Newspapers, Jul. 4, 2014

fault lines, rivers and streams and sensitive wildlife habitats.

California has some of the best-trained and best-equipped emergency response teams in the country, according to some experts, but they're not always where they're needed.

"Proximity matters," said Kelly Huston, a spokesman for the state Office of Emergency Services.

Since Gov. Jerry Brown proposed a shift in state oil spill and prevention resources in his budget in January, members of the California Legislature have held hearings and offered legislation to improve the state's preparedness.

"Everyone recognizes this is a critical need throughout the state," said state Sen. Fran Pavley, D-Agoura Hills.

Starting next year, California will begin imposing a 6.5-cent-a-barrel fee on oil transported to the state by rail to fund oil spill response and prevention efforts. State lawmakers have introduced another bill to levy an additional fee to train and equip firefighters who may be called to respond to a rail incident.

California officials soon expect the state to receive as much as a quarter of its oil supply by rail, which means more frequent train movements through the state's highest-risk areas.

"It makes what we're doing that much more important," said state Sen. Jerry Hill, D-San Mateo.

The map was presented last week by the state Environmental Protection Agency at a workshop on crude oil trends at Berkeley City College. It shows a dearth of response capability in locations where derailments have occurred more frequently, according to the California Public Utilities Commission.

These include the Cantara Loop on the upper Sacramento River, the site of a 1991 train derailment that released thousands of gallons of pesticide, killing fish along a 40-mile stretch of the river.

They also include the Feather River Canyon, which according to documents released last week by OES, is the route of a twice-monthly train of Bakken crude oil. The trains, operated by BNSF, pass through Sacramento on their way to a rail terminal in Richmond.

"A spill into these sources of water makes it even more problematic," Pavley said.

Another vulnerable site: Cuesta Grade, a steep, serpentine stretch of track north of San Luis Obispo. A proposed crude-by-rail terminal at the Phillips 66 refinery in Santa Maria, south of San Luis Obispo, would bring five 80-car oil trains a week over the line, operated by Union Pacific.

Aaron Hunt, a spokesman for Union Pacific, said that the railroad had reached out to fire departments across California in the communities where it operates and has offered "comprehensive" hazardous materials training to first responders around the state.

"We annually train local, state and federal first-responders on protocols to minimize the impact of a derailment in their communities," he said.

BNSF, the railroad that hauls more crude oil than any in North America, is offering hazardous materials training for hundreds of firefighters, including some in Sacramento, according to spokeswoman Lena Kent.

Trains transporting crude oil are not new in California. From 1983 to 1997, Southern Pacific Railroad operated one such train every day between Bakersfield and South Los Angeles over the Tehachapi Pass.

But that oil was thicker California crude that doesn't ignite easily, and it was also transported in specially designed tank cars. Much of the crude oil coming into the state today is lighter and more flammable, and it's loaded into a fleet of tank cars with a long record of failure in derailments.

"In light of new risks, it's essential for first responders to have the right training and equipment to prepare for and respond to accidents," said Curtis Brundage, a hazardous materials specialist with the San Bernardino Fire Department, in a state Senate hearing last month.

The worst accident occurred a year ago, in Lac-Megantic, Quebec. An unmanned Bakken crude oil train broke loose and derailed in the center of town. Massive fires and explosions killed 47 people and leveled entire blocks of buildings.

More derailments followed, though none fatal, as the railroads and the federal government initiated a series of safety improvements. Emergency response officials from all over the country have testified in Washington in the past few months that local fire departments lack the resources to confront large fires from trains carrying 3 million gallons of oil.

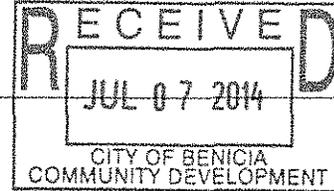
In a report last month, OES made a dozen recommendations to improve the safety of California communities, including increased track inspections, stronger tank cars, more funding for emergency response and better notification of hazardous shipments from the railroads.

Hill gives the railroads credit for taking the issue seriously with stepped-up track inspections, new operating procedures, orders for stronger tank cars and offers to train emergency personnel. But he added that state lawmakers and agencies were right to push for more before a trickle of oil shipments by rail to California turned into a steady stream.

"We saw what happened elsewhere," he said. "This is just to make sure California is prepared."

Amy Million - Crude by Rail in Benicia

From: Marty Gustafson <gustafmarty@yahoo.com>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>, "bkilger@ci.benicia.ca.us" <bkilger@ci.benicia.ca.us>
Date: 7/7/2014 10:13 AM
Subject: Crude by Rail in Benicia
CC: "info@beniciaCBR.com" <info@beniciaCBR.com>



Ms. Million and Mr. Kilger

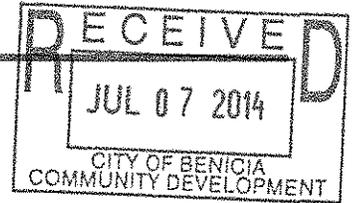
I've been resident of Benicia for 13 years, much of which has been under Valero's ownership and management of our local refinery. I'm not a petroleum or rail safety expert so I am a layperson, but I do know people who work in the local refineries and have learned that using cleaner easier to refine raw product is essential to maintaining a profitable operation. I also know safety is a huge priority for their operations as it also is essential to their profitability. I am quite confident that Valero's management would not pursue any endeavor without the up-most concern and scrutiny for the safety of our community and it's employees. In my opinion Valero has earned this opportunity for its record as being a responsible and safe operator here in Benicia since taking ownership of the refinery.

Lastly, we need to provide assurance that the refinery can stay competitive and sustain its presence here in Benicia to keep the middle class jobs and the economies that spawn from them. Our middle class is disappearing in our country and we as a nation should be very concerned about that. We have some balance in Benicia largely due to Valero as an operator and employer of middle class jobs in our community, which is one of the reasons that make Benicia such a great place to live and raise families. So my vote is for sustaining a middle class in our community and am ok with Valero's pursuits for crude by rail.

Marty Gustafson
Benicia Resident

Amy Million - Stop Crude Oil

From: "Sansone, Jelayn" <Jsansone@csum.edu>
To: "Amy.Million@ci.benicia.ca.us" <Amy.Million@ci.benicia.ca.us>
Date: 7/7/2014 2:36 PM
Subject: Stop Crude Oil
CC: "Len Sansone (lsansone@geiconsultants.com)" <lsansone@geiconsultants.com>



Hi Amy,

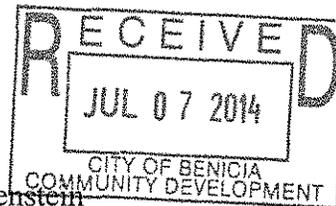
I'm a resident in Benicia and am very concerned about crude oil impacts in our city. I would hopefully like to see that this project will not go to fruition. Thanks for your time.

Jelayn Sansone

CSU California Maritime Academy
GL Accountant II
200 Maritime Academy Drive
Vallejo, CA 94590
Tel: 707-654-1280
Fax: 707-654-1042
Email: jsansone@csum.edu

Amy Million - Valero Crude by Rail Project

From: Helen Loewenstein <Helen@loewensteinlaw.com>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>
Date: 7/7/2014 5:27 PM
Subject: Valero Crude by Rail Project
CC: H Loewenstein <helenloewenstein@gmail.com>, Peter Loewenstein <Peter@loewensteinlaw.com>
Attachments: Letter to City of Benicia 7-7-14.pdf; U.S. Rail Transportation Report.pdf; Exhibit 4-2.pdf



Amy,

I spoke with you last week, but had a few additional questions. As you weren't available today, and because I will be out of town on Thursday night, I put together a letter/documents stating our objections for submission at the Public Hearing.

You may reach me by cell (925) 708-7765 on Tuesday, Wednesday, or Thursday.

Thank you!

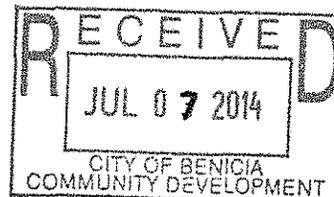
Helen M. Loewenstein

2033 N. Main Street, Ste 430
Walnut Creek, CA 94596-3748
925-256-3300/925-256-3308 (fax)
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Peter & Helen Loewenstein
2033 N Main Street, Suite 430
Walnut Creek, CA 94596

July 7, 2014

City of Benicia
Community Development Department
250 East L Street
Benicia, CA 94510



RE: Valero Crude by Rail Project

Dear Benicia Planning Commission, Mayor and Members of the City Council:

As taxpayers and property owners, we are opposed to the Valero proposal to increase crude transportation via railway. The major concerns revolve around increased traffic, safety, noise pollution, and business disruption.

We are the owners of **511 East Channel Road**, which abuts the Valero Refining Company property boundary line. Our property is leased to Veolia Environmental Services (VES) who employ 55 people, 20 of whom are office staff. Even now, there are issues concerning the railways. VES trucks, visitors, and employees are often delayed due to train crossings. Phone conversations and conference calls are often put on hold until the train noise abates. Between the hours of 9-12:00 rail traffic is higher and often large trucks are lined up at the crossing. When this occurs, cars cut across our property and often speed through our parking lot to get around the traffic becoming a dangerous liability.

An increase in rail traffic would cause even further congestion, impede the operation of businesses in the area, choke off police and fire service, increase the risk of traffic accidents, and could be harmful to the environment and human life should a derailment occur. Statistics show that vastly increased Crude Rail Transport may impact area safety (see Oil by Derailments in 2013 and 2014 [page 12] U.S. Rail Transportation of Crude Oil: Background and Issues for Congress).

Notwithstanding train and track friction noise, the decibel level for the train horn alone is between 96 - 110 (U.S. Department of Transportation Federal Railroad Administration*) and must be sounded in a standardized repetitive pattern. According to the National Institute on Deafness, "Regular exposure of more than one minute at **110 DECIBELS** risks permanent hearing loss."

*Under the Train Horn Rule (49 CFR Part 222), locomotive engineers must begin to sound train horns at least 15 seconds, and no more than 20 seconds, in advance of all public grade crossings.

- If a train is traveling faster than 60 mph, engineers will not sound the horn until it is within ¼ mile of the crossing, even if the advance warning is less than 15 seconds.
- There is a "good faith" exception for locations where engineers can't precisely estimate their arrival at a crossing and begin to sound the horn no more than 25 seconds before arriving at the crossing.
- Train horns must be sounded in a standardized pattern of 2 long, 1 short and 1 long blasts. The pattern must be repeated or prolonged until the lead locomotive or lead cab car occupies the grade crossing. The rule does not stipulate the durations of long and short blasts.
- The maximum volume level for the train horn is 110 decibels which is a new requirement. The minimum sound level remains 96 decibels."

In addition, the Valero proposal also seems counter-intuitive to the City of Benicia Office of Economic Development plan which states:

"Located near the junction of I-680 and I-780, Benicia Industrial Park (BIP) provides easy access to most of the San Francisco Bay Area. It is directly across the bridge from Contra Costa and East Bay markets. The deep-water port, on the Carquinez Strait, is 24 miles from the Golden Gate Bridge, providing worldwide access.

Benicia Industrial Park is home to over 450 businesses and 6,500 employees. Its diverse anchors include Valero Refinery, Dunlop Manufacturing, BioRad Laboratories and Schoenstein & Co. Pipe Organs, the oldest and most successful pipe organ manufacturer in the Western United States.

The **Port of Benicia**, operated by AMPORTS, encompasses 640 acres and 140,000 square feet of buildings. The Port's 2,400 foot deep-water pier can berth three vessels, with a dockside water depth of 38 feet. Rail service is provided by Union Pacific. The Port specializes in handling bulk products such as agricultural goods and motor vehicles."

With the waterways so accessible and less likely to cause injury/death by derailment and/or fire, why not continue the current form of transporting crude? Will current "easy access" become poor access on highways, off ramps, and surrounding roadways? Will added congestion impede operation of the other 449 businesses and 6,500 employees in the area?

Livelihood could be jeopardized as *existing* tenants may not likely extend their leases in the Benicia Industrial Park if abovementioned *existing* conditions worsen. I implore the City of Benicia to closely examine the likely impact on small business and property owners in Benicia Industrial Park, and to explore the option of adding an oil pipeline to Valero instead of adding rail cars.

Thank you for your time and consideration.

Sincerely,

A handwritten signature in black ink, appearing to read 'P & H Loewenstein', written in a cursive style.

Peter & Helen Loewenstein

Enclosures: U.S. Rail Transportation of Crude Oil: Background and Issues for Congress
Figure 4-2/Cumulative Plus Project Queuing Analysis

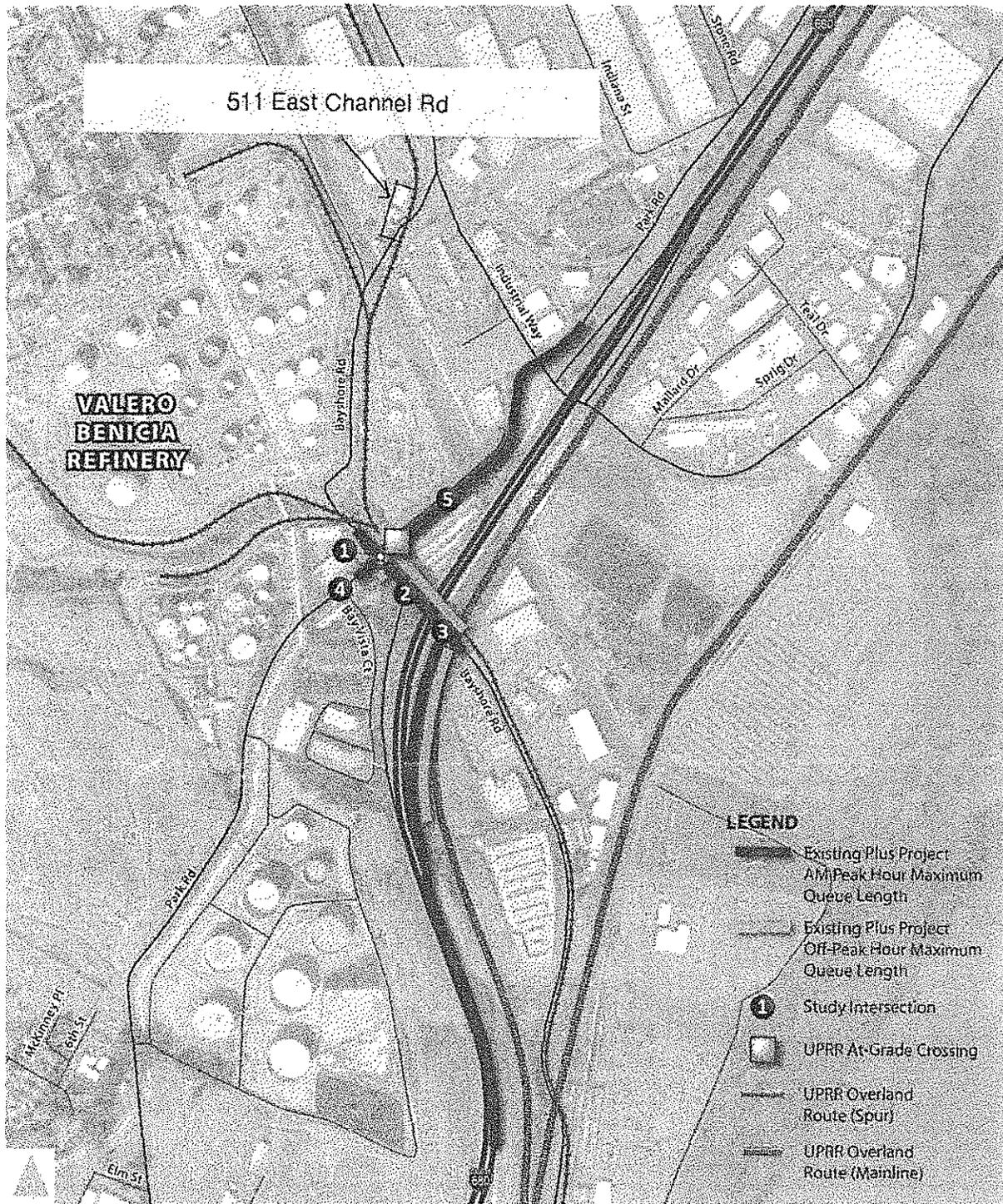
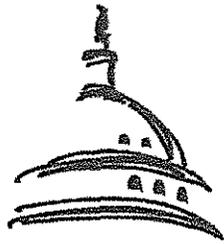


Figure 4-2.



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U.S. Rail Transportation of Crude Oil: Background and Issues for Congress

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May 5, 2014

Congressional Research Service

7-5700

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Summary

North America is experiencing a boom in crude oil supply, primarily due to growing production in the Canadian oil sands and the recent expansion of shale oil production from the Bakken fields in North Dakota and Montana as well as the Eagle Ford and Permian Basins in Texas. Taken together, these new supplies are fundamentally changing the U.S. oil supply-demand balance. The United States now meets 66% of its crude oil demand from production in North America, displacing imports from overseas and positioning the United States to have excess oil and refined products supplies in some regions.

The rapid expansion of North American oil production has led to significant challenges in transporting crudes efficiently and safely to domestic markets—principally refineries—using the nation’s legacy pipeline infrastructure. In the face of continued uncertainty about the prospects for additional pipeline capacity, and as a quicker, more flexible alternative to new pipeline projects, North American crude oil producers are increasingly turning to rail as a means of transporting crude supplies to U.S. markets. According to rail industry officials, U.S. freight railroads are estimated to have carried 434,000 carloads of crude oil in 2013 (roughly equivalent to 300 million barrels), compared to 9,500 carloads in 2008. In 2014, 650,000 carloads of crude oil are expected to be carried. Crude imports by rail from Canada have increased more than 20-fold since 2011. The amount of oil transported by rail may also be influenced by a tight market for U.S.-built tankers.

While oil by rail has demonstrated benefits with respect to the efficient movement of oil from producing regions to market hubs, it has also raised significant concerns about transportation safety and potential impacts to the environment. The most recent data available indicate that railroads consistently spill less crude oil per ton-mile transported than other modes of land transportation. Nonetheless, safety and environmental concerns have been underscored by a series of major accidents across North America involving crude oil transportation by rail—including a catastrophic fire that caused numerous fatalities and destroyed much of Lac Mégantic, Quebec, in 2013. Following that event, the U.S. Department of Transportation issued a safety alert warning that the type of crude oil being transported from the Bakken region may be more flammable than traditional heavy crude oil.

Legislation introduced in Congress following the Lac Mégantic disaster would require railroads to have at least two crew members aboard all trains. In addition, policy makers are discussing regulatory changes involving tank car design, prevention of derailments, and selection of preferred routes for transporting oil by rail. Congress may evaluate these changes in the reauthorization of the Rail Safety Improvement Act of 2008 (P.L. 110-432).

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Introduction

North America is experiencing a boom in crude oil supply, primarily due to the growth of heavy crude production in the Canadian oil sands¹ and the recent expansion of shale oil production in North Dakota, Montana, and Texas. North American production now supplies 66% of U.S. crude oil demand, displacing crude from Latin America, Africa, and the Middle East.

This shift has led to significant challenges in transportation, as refineries that once received crude oil principally from oceangoing tankers are now seeing increasing deliveries by domestic transport. Existing pipeline capacity is, in some cases, insufficient to carry growing crude oil from some production areas, or does not link to the refineries needing the oil. The domestic barge network does not serve some key production regions located far from navigable waterways. As a quicker, more flexible alternative to new pipeline projects, North American crude oil producers are increasingly turning to rail as a means of transporting crude supplies to U.S. markets. Increased exports of refined products—and, if Congress changes the law, of crude oil—could lead to even larger volumes of oil being transported by rail. According to rail industry officials, U.S. freight railroads are estimated to have carried 434,000 carloads of crude oil in 2013, or roughly 300 million barrels, compared to 9,500 carloads in 2008.² In 2014, 650,000 carloads of crude oil are expected.³ Crude imports by rail from Canada have increased more than 20-fold since 2011.

The rapid increase in crude oil shipments by rail will likely increase the number of oil spills from rail transportation. However, the most recent data available indicate that railroads consistently spill less crude oil per ton-mile transported than other modes of land transportation. The amount of crude spilled per ton-mile of rail transport declined significantly between the early 1990s and the 2002-2007 period, the most recent years for which data are available.⁴

Nonetheless, the increase in rail shipments of crude has raised safety and environmental concerns. These concerns have been underscored by a series of major incidents involving crude oil transportation by rail, including a catastrophic fire and explosion in Lac Mégantic, Quebec, in July 2013 and a derailment in Casselton, ND, in December 2013 that led to a mass evacuation. Consequently, government agencies in the United States and Canada have issued new regulations and are considering others related to oil transport by rail, and some Members of Congress have called for tighter rules governing crude oil railcars as well as a broader reconsideration of the role of rail in the nation's oil transportation infrastructure.⁵

¹ The terms “oil sands” and “tar sands” are often used interchangeably to describe a particular type of nonconventional oil deposit. Opponents of the resource’s development often use the term “tar sands,” which arguably carries a negative connotation; proponents typically refer to the material as oil sands. The use of this term is not intended to reflect a point of view, but to adopt the term most commonly used by the primary executive-branch agencies involved in recent oil sands policy issues.

² Edward R. Hamberger and Andrew J. Black, “Freight Rail and Pipelines Deliver Energy for America,” *The Hill, Congress Blog*, November 5, 2013, <http://thehill.com/blogs/congress-blog/energy-environment/189187-freight-rail-and-pipelines-deliver-energy-for-america>.

³ *Oilgram Price Report*, “North American Crude By Rail Rising: BNSF,” v. 92, no. 58, March 26, 2014, p. 1.

⁴ Estimates by CRS based on data from Dagmar Etkin, *Analysis of U.S. Oil Spillage*, API Publication 356, August 2009, and Association of Oil Pipelines, *Report on Shifts in Petroleum Transportation: 1990-2009*, February 2012.

⁵ See, for example, Office of Senator John Hoeven, “Hoeven to Meet Saturday with BNSF Railway President and CEO to Address Railroad Safety,” press release, January 3, 2014.

Why Is Oil Moving by Rail?

In 2013, the United States produced 2.72 billion barrels of crude oil and imported another 2.82 billion barrels.⁶ Canada has become the United States' leading foreign supplier, thanks to its increasing production from oil sands.⁷ However, U.S. oil output has been increasing rapidly. In October 2013, U.S. crude oil production exceeded imports for the first time since February 1995.⁸

The location of U.S. crude oil production has been changing rapidly. In particular, production in Alaska and from offshore sites has been declining, while production in Texas and North Dakota has been rising. The U.S. Geological Survey recently estimated that 2.7 billion barrels of light sweet crude oil remain in overlooked producing formations,⁹ including the Eagle Ford shale, a prolific source of very light sweet crude oil in Texas, and the Bakken formation in North Dakota, a source of light sweet crude oil that rivals West Texas crude in quality.¹⁰

Almost all oil produced domestically, as well as some Canadian production, flows to one of the 115 U.S. refineries (Figure 1).¹¹ Nearly 45% of the country's refining capacity is located in the Gulf Coast, where 43 refineries process more than 9 million barrels of oil per day (bpd). However, the Midwest and the West Coast also have significant refining capacity.

⁶ Energy Information Administration, *U.S. Crude Oil Supply & Disposition*, http://www.eia.gov/dnav/pet/pet_sum_crdsnd_k_a.htm. A barrel of oil is equal to 42 gallons.

⁷ CRS Report R43128, *Oil Sands and the Oil Spill Liability Trust Fund: The Definition of "Oil" and Related Issues for Congress*, by Jonathan L. Ramseur.

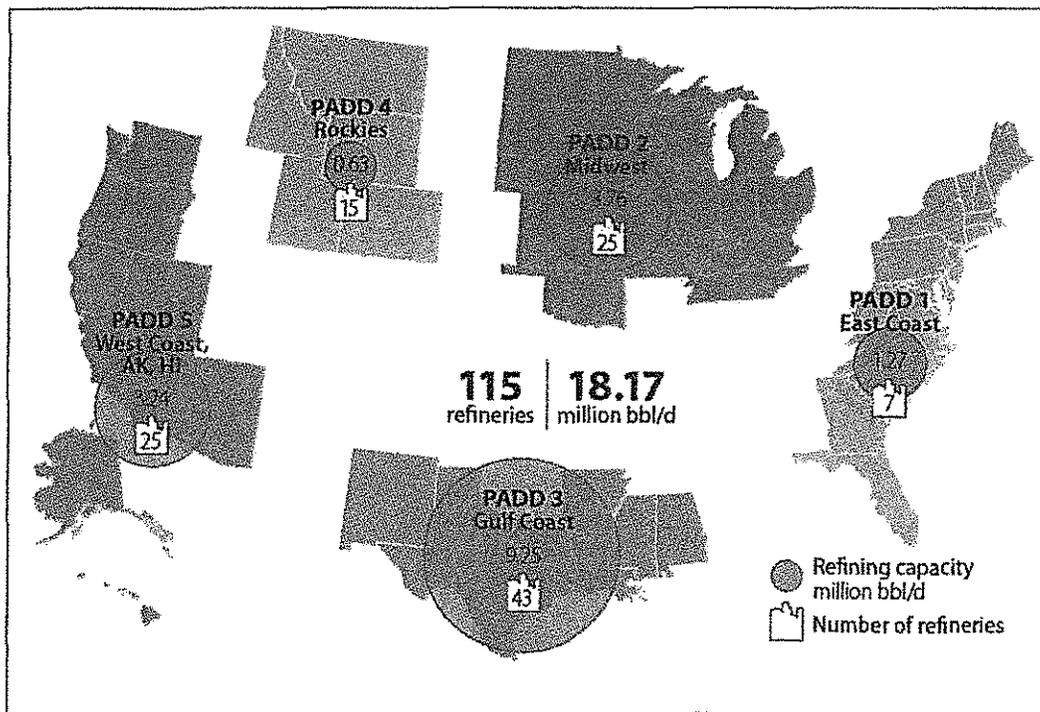
⁸ "US Crude Production Tops Imports For The First Time Since 1995," *Oil Daily*, November 14, 2013.

⁹ M. Tennyson et al., *Assessment of Remaining Recoverable Oil in Selected Major Oil Fields of the Permian Basin, Texas and New Mexico*, 2012, USGS, <http://pubs.usgs.gov/fs/2012/3051/>.

¹⁰ "Light" refers to oils with low specific gravity. "Sweet" refers to oils with low sulfur content. Light, sweet crudes are more valuable than heavier or sourer crude oils.

¹¹ For further information on the petroleum refining industry, refer to CRS Report R41478, *The U.S. Oil Refining Industry: Background in Changing Markets and Fuel Policies*, by Anthony Andrews et al.

Figure I. U.S. Refinery Capacity by PADD in 2012



Sources: Congressional Research Service; Energy Information Administration.

Note: PADD = Petroleum Administration for Defense Districts, five districts established by executive order during World War II for gasoline rationing.

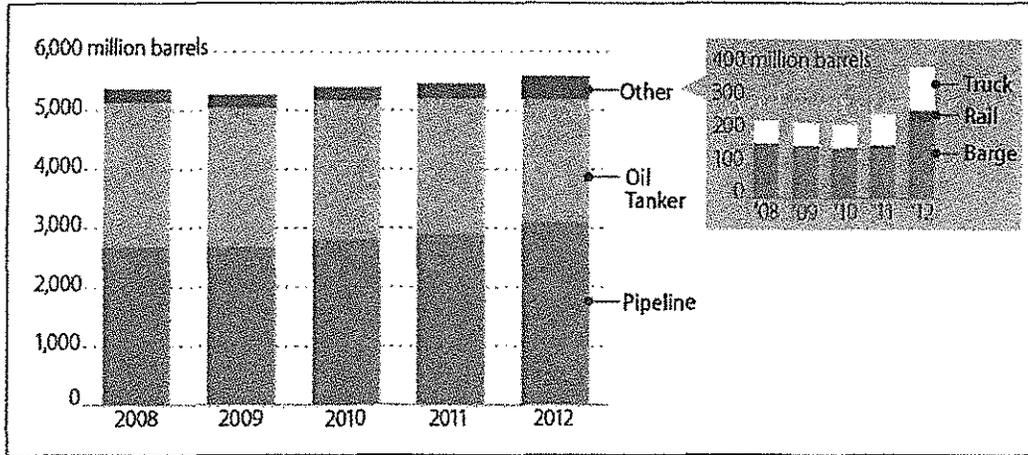
The last entirely new petroleum refinery in the United States opened in 1976. The number of refineries in operation has steadily declined since then as refining capacity has become concentrated in ever larger refineries. A quarter of U.S. capacity is concentrated in 11 refineries with capacities exceeding 300,000 bpd. The largest, Shell/Motiva's Baytown, TX, refinery, was recently expanded to 600,000 bpd. Operable U.S. refining capacity has actually increased from 16.5 million to nearly 18 million bpd over the last decade. Refineries representing approximately 75% of domestic capacity (13.3 million bpd) have the ability to process heavy crude oils, but many smaller refineries can process only light to intermediate crude oil.

Each refinery depends upon a certain grade or blend of crude oils to operate efficiently, depending upon its custom-designed processing equipment. A refinery designed to run light crude oil could not switch to heavy crude oil without adding a coking unit, for example. However some refineries that process heavy sour crude could switch to lighter sweet crude by bypassing their coking units, if the economics of doing so are favorable. Until quite recently, the supply of light sweet crude oil was diminishing, but newly available light sweet crudes from North Dakota's Bakken formation are changing refining dynamics in some regions of the United States, especially as refineries seek supplies that cannot be delivered economically by tanker ships or pipelines.

Traditionally, pipelines and oceangoing tankers have delivered the vast majority of crude to U.S. refineries, accounting for approximately 93% of total receipts (in barrels) in 2012. Although other modes of transportation—rail, barge, and truck—have accounted for a relatively minor portion of

crude oil shipments, volumes have been rising very rapidly. The volume of crude oil carried by rail increased 423% between 2011 and 2012, and the volume moving by barge, on inland waterways as well as along intracoastal routes, increased by 53%. The volume of crude oil shipped by truck rose 38% between 2011 and 2012. Figure 2 shows the change in transportation by mode between 2008 and 2012.

Figure 2. U.S. Refinery Receipts of Crude Oil by Mode of Transportation



Source: Prepared by CRS; data from EIA, *Refinery Capacity Report*, Table 9, June 2013.

Notes: Some shipments may involve multiple modes, such as rail to barge. This figure indicates only the mode used for the last leg of such shipments.

Rail is a relatively high-cost method of transporting oil. Although crude oil transportation costs are typically not a major driver of refiner profitability, refiners are typically wary of incurring any costs that are higher than those faced by their competitors, as all refined petroleum products sold in a region tend to command the same price independent of the refinery that produced them.

The Economics of Oil by Rail

In the short run, rapid expansion of oil production in the Bakken—production volumes increased nearly ten-fold between 2005 and 2013¹²—strained the capacity of existing pipelines and of refiners able to process the oil. Finding ready buyers was difficult, resulting in discounted prices compared to other crude oil traded in the U.S. market. With Bakken crude selling for approximately \$4 to \$28 per barrel less than West Texas Intermediate (WTI) crude, the U.S. reference price for crude grade, refiners found it profitable to utilize the North Dakota oil delivered by rail even though the rail transportation cost is perhaps \$5 to \$10 per barrel higher than pipeline costs.

Rail has also been critical to development of Canadian oil sands. Although the vast majority of crude oil imports from Canada are delivered via existing pipeline, imports by rail are estimated to have increased from 1.6 million barrels in 2011 to 40 million barrels in 2013. Construction of the

¹² Energy Information Administration crude oil production data, by state, available at <http://www.eia.doe.gov>.

proposed Keystone XL pipeline could move a significant proportion of these shipments off the rails, as pipeline transportation is likely to cost less per barrel.¹³

For certain refiners, the economics of using rail to transport Bakken oil supplies are even more attractive. In 2012, several refineries in the Philadelphia area were scheduled for closure. The refineries were using imported crudes, largely sourced from West Africa, which sold at a premium to WTI,¹⁴ making their refined products, notably gasoline, uncompetitive against similar products produced by Gulf Coast refineries that used cheaper heavy crudes. By using supplies from the Bakken, these refineries have lowered their costs and have become more competitive. New owners are now investing in the refineries, including installation of high-speed rail unloaders that would allow them to use 230,000 barrels per day of Bakken crude oil by early 2014.¹⁵ These innovations would also reduce the cost of rail transportation per barrel.

The attractiveness of rail transportation of oil may be temporary. Transporting Bakken crude by rail became cost-effective because of the price discounts created by pipeline bottlenecks. If additional oil pipeline capacity were constructed, say from North Dakota to the East Coast market, refiners would likely prefer lower-cost pipeline transportation. And if the refineries could obtain Bakken crude by pipeline, demand would increase, likely reducing or eliminating the current price discount. Without the price discount, Bakken oil would not be competitive in refining when transported by rail. On the other hand, a rising Bakken crude oil price would likely lead to greater drilling activity in the Bakken fields. Given the uncertainty about the future value of the oil and the longevity of the deposits, it is not certain that investors will undertake construction of pipelines from the Bakken fields to the East Coast. In that case, large volumes of crude could be transported by rail well into the future.

Railroads are a viable alternative to pipeline transportation largely because they offer greater flexibility. The nation's railroad network is more geographically extensive than the oil pipeline network, and better able to ship crude oil from new areas of production to North American refineries. While there are about 57,000 miles of crude oil pipeline in the United States, there are nearly 140,000 miles of railroad.¹⁶

¹³ For more information about the Keystone XL pipeline, see CRS Report R41668, *Keystone XL Pipeline Project: Key Issues*, by Paul W. Parfomak et al.

¹⁴ Energy Information Administration price data available at <http://www.eia.doe.gov>.

¹⁵ Matthew Phillips, "North Dakota's Bakken Oil Finally Hits the East Coast," *Bloomberg Businessweek*, February 6, 2013.

¹⁶ Pipeline data from PHMSA, railroad mileage from Association of American Railroads (includes shortline rail mileage, does not include parallel trackage).

The U.S. Railroad Industry in Brief

The U.S. rail network comprises seven large (Class I) railroads, which focus on moving products between North American regions. These railroads generally market to large volume, long-distance shippers. There are also roughly 500 "shortline" (Class II or III) railroads that sometimes serve as the first or final leg of a Class I rail shipment. Shortlines were often spun-off from Class I railroads because of insufficient business over the line. Class I railroads account for about 70% of system mileage, 90% of railroad employees, and about 95% of freight railroad revenue. Since crude oil movements involve non-traditional rail origins (drilling sites) and destinations (refineries), shortlines are often involved in these movements.

Railroad track is categorized into classes that determine the allowable speeds over the track.¹⁷ Most track with the lowest speed limits is the property of shortlines. If track needs maintenance work, a railroad will issue a "slow order" on that section of track, reducing train speeds. Class I railroads have transitioned to using bigger and heavier cars, raising the maximum weight on many track sections from 263,000 lbs. to 286,000 lbs. Shortline railroads that interchange traffic with Class I railroads have had to improve their roadbeds to accommodate the heavier cars.

The railroad industry, since 1980, is mostly economically deregulated. The Surface Transportation Board can review the reasonableness of railroad rates and service in situations where the railroad is determined to have "market dominance," generally where a shipper is served by only one railroad and cannot ship economically by other means. As "common carriers," railroads are required to provide rail service upon reasonable request. Railroads do not require a special federal permit to transport crude oil. Federal railroad law preempts state and local authority, which is generally restricted to a state or local government's "police powers."

The geographic flexibility of the railroad network compared to the oil pipeline network can be especially beneficial for a domestic market in flux. Railroads can increase capacity relatively cheaply and quickly by upgrading tracks and roadbeds to accommodate higher train speeds, building passing sidings or parallel tracks, increasing the frequency of switchovers from one track to the other, and upgrading signal systems to reduce the headway needed between trains. Although railroads need approval from the federal Surface Transportation Board (STB) to build new lines, they do not require STB approval to make improvements to existing lines. And even without capacity improvements, railroads can offer routings not served by pipelines.

A significant fall-off in railroad coal movements has increased railroads' capacity to transport oil over some routes. In 2013, railroads carried about 395,000 more tank cars of crude than in 2005, but about 1.3 million fewer cars of coal. To put the increase in crude traffic in perspective, crude oil represented less than 1% of total rail carloads in 2012. In the first three quarters of 2013, crude carloads increased to 1.4% of total rail car loadings. While, on a national scale, increased rail car loadings of crude oil represent a relatively small percentage of total traffic, significant increases in traffic in a specific area can cause bottlenecks that can reverberate across the entire rail network. The STB held a hearing in April 2014 to hear complaints from non-oil shippers concerning poor rail service in the upper Midwest due to oil traffic and the severe winter weather.¹⁸ The STB ordered BNSF and CP railroads to report how they intended to ensure delivery of fertilizer to farmers in spring 2014. At the hearing, BNSF (the railroad most directly serving the Bakken region) noted that its car loadings in North Dakota had more than doubled from 2009 to 2013, and that in October 2013, crude oil and agricultural car loadings surged by more than it could manage. Past experience has shown that railroad bottlenecks are not quickly resolved.

This experience illustrates that pipelines can generally provide more reliable service than railroads. Among other differences, rail shipments are more affected by weather. In addition,

¹⁷ See 49 C.F.R. §213.9.

¹⁸ STB, Docket no. EP 724, April 10, 2004.

railroads generally experience peak demand during the fall due to the grain harvest and retailers' holiday shipments. This may cause locomotives and track capacity to be in shorter supply at certain times of the year.

Railroad transport reportedly costs in the neighborhood of \$10 to \$15 per barrel compared with \$5 per barrel for pipeline. In return, railroads offer oil producers certain advantages. Heated railroad tank cars improve the viscosity of oil sands crude so that less diluent needs to be added than if the product were being moved by pipeline. Generally, railroads are more willing to enter into shorter-term contracts with shippers than pipelines (1 to 2 years versus 10 to 15 years), offering more flexibility in a rapidly changing oil market. Moving oil by train from North Dakota to the Gulf Coast or Atlantic Coast requires about 5 to 7 days' transit, versus about 40 days for oil moving by pipeline, reducing producers' need for working capital to cover the cost of oil in transit.¹⁹

Crude oil often moves by unit train, a train that carries just one type of cargo in a single type of car and serving a single destination. Unit trains do not need to be switched or shunted in rail yards, saving time and reducing costs, and return to their point of origin as soon as they have been unloaded. A train consisting of 70 to 120 tank cars can carry in the neighborhood of 50,000 to 90,000 barrels of oil, depending on the type of crude.

One hindrance to the expansion of crude-by-rail has been the lack of tank cars and loading and unloading infrastructure. Much of this investment is being made by the oil industry or by rail equipment leasing companies, not railroads. As of April 2014, manufacturers had 50,000 crude oil tank cars on order, on top of an existing fleet of 43,000. (This is in addition to 30,000 tank cars that carry ethanol and 27,000 that carry other flammable liquids.) In 2013, over 28,000 tank cars of all types were built, up from over 17,000 in 2012.²⁰ Facilities for building tank cars are unique because the process involves baking the entire car in an oven. One manufacturer believes the tank car builders are capable of increasing production each year by 7,000 to 10,000 cars.

Rail terminal capacity is expected to increase fourfold from 2012 to 2015.²¹ Matching the daily throughput volume of a pipeline requires several trains per day, with each train taking 13 to 24 hours to unload; oil rail terminals therefore require large areas for parallel loop tracks where multiple trains can await unloading.

The Role of Barges and Ships in Domestic Crude Transportation

Many refineries traditionally have received crude from overseas and thus are located near the coastline with access to dock facilities. Some are not equipped to receive crude by rail. Hence, some railroads are transferring oil to barges for the last leg of the trip to refineries. Locations where railroads transfer crude oil to barges include St. Louis and Hayti, MO; Osceola, AR; Hennepin, IL; Albany, NY; Yorktown, VA; and Anacortes and Vancouver, WA. In addition, crude produced at Eagle Ford, TX, which is located near ports, is being moved along the coast by either barge or ship.

¹⁹ BB&T Capital Markets, "Examining The Crude By Barge Opportunity," June 10, 2013, p. 15.

²⁰ Tank car numbers from presentations by panel on tank car safety (panel I), NTSB forum, *Rail Safety: Transportation of Crude Oil and Ethanol*, April 22-23, 2014.

²¹ E. Russell Brazier, RBN Energy Inc. presentation at CSIS conference, *North American Oil and Gas Infrastructure, Shale Changes Everything*, November 14, 2013.

One river barge can hold 10,000 to 30,000 barrels of oil. Two to three river barges are typically tied together in a single tow that carries 20,000 to 90,000 barrels, about the same load as a unit train. Coastal tank barges designed for open seas, known as articulated tug-barges, or ATBs,²² can hold 50,000 to 185,000 barrels, although newer ATBs can carry as much as 340,000 barrels, comparable to the capacity of coastal tankers. ATBs are slower, less fuel-efficient, and more restricted by sea conditions, but nevertheless may have an economic advantage over tankers because Coast Guard crewing regulations allow them to sail with one-third to half the crew required on a tanker. Crude oil tankers used to move Alaska oil to West Coast refineries have capacities of 800,000 to over 1 million barrels.

An advantage of tankers over railroads is the greater amount of oil they can carry in a single voyage, which better matches the daily consumption rate of refineries. With the median capacity for U.S. refineries at about 160,000 barrels per day, a coastal tanker can carry a two-day supply of oil. In addition, while railroads must build and maintain tracks and pay property taxes on their rights-of-way, the ocean is free, and harbor channels are largely provided by the federal government. For these reasons, tankers can be much cheaper than railroads in moving oil, even though the railroad route may be much more direct. For instance, the distance between the Bakken region in North Dakota and refineries in the Northeast is approximately 1,800 miles, and the cost of railroad transport is \$14 per barrel.²³ The distance from Texas ports near the Eagle Ford region to the same refineries is about 2,100 miles, and tanker rates are \$5 to \$6 per barrel.²⁴ Similarly, the overland distance from the Eagle Ford region to Los Angeles-area refineries is about 1,400 miles, and the estimated cost of railroad transport is \$15 per barrel, while the water route through the Panama Canal is 5,200 miles and is estimated to cost \$10 per barrel.²⁵

Although seemingly a circuitous route compared to rail, it is not inconceivable that tankers could play a role in moving Bakken oil to East or West Coast refineries. Significant amounts of Bakken oil are moved to Gulf Coast terminals by pipeline, railroad, barge, or combinations of these modes for refining within that region. From a Gulf Coast port, tankers could transport the oil to either East or West Coast refineries. Via existing rail and pipeline connections to Great Lakes ports, tankers could also move Bakken oil from there to Northeast refineries. However, the economic viability of these routes, in particular, and routes involving domestic coastal transport in general, is heavily influenced by the Jones Act.²⁶

²² The bow of the tug fits into a notch in the stern of the barge and the tug is hinged to the barge on both sides of its hull, allowing fore and aft (pitch) movement, such as over sea swells.

²³ Platts, *Oilgram Price Report*, January through April 2014 issues. Railroad distance approximated using Rand McNally Road Atlas.

²⁴ Platts, *Oilgram News*, September 9, 2013; Bloomberg Businessweek, "U.S. Law Restricting Foreign Ships Leads to Higher Gas Prices," December 12, 2013. The sailing distance is 1,900 nautical miles (one nautical mile equals 1.151 statute miles); National Oceanic and Atmospheric Administration, *Distances Between United States Ports*, 2012.

²⁵ En*Vantage, Inc., "The Surge in U.S. Crude Oil Production," Presentation to PFAA 20th Annual Conference, October 24, 2013; Bloomberg, "Texas Vies with Saudi Arabian Oil in California Shipments," January 29, 2014. When expansion of the locks through the Panama Canal is completed in 2015, the capacity of tankers able to pass through will increase from 380,000 barrels to 600,000 barrels.

²⁶ Grain and feed producers in the upper Midwest contend that while they can move product economically by barge to New Orleans or by rail to a Great Lakes port, from there, because of the Jones Act, they have no economic access to dry bulk ships that could deliver the feed to eastern North Carolina hog and poultry farms. These farms import their feed from Canada and South America.

The Jones Act

The Jones Act may have a profound impact on where crude oil is sourced and how it is transported. The Jones Act requires that vessels transporting cargo between two U.S. points be built in the United States, as well as crewed and at least 75% owned by U.S. citizens.²⁷ The domestic build requirement for tanker ships, in particular, has been identified as contributing to higher costs in moving domestic crude oil along the coasts.²⁸ Domestically built tankers are about four times the price of foreign-built tankers,²⁹ and there is limited capacity in U.S. shipyards to build them. Much of the existing crude oil tanker fleet was built since 2000 to meet Oil Pollution Act of 1990 (P.L. 101-380) requirements that tankers calling at U.S. ports have double hulls. Two crude carriers are expected to be delivered in 2014 to replace two vessels in Alaska trade.

As of June 2013, the Jones Act-eligible fleet of crude oil tankers consisted of 10 ships, all employed in moving Alaska crude oil to the U.S. West Coast or to a refinery in Alaska.³⁰ Since annual Alaska oil production has fallen by about 46% over the last decade, the Jones Act crude oil fleet has been in decline. About 30 Jones Act-eligible tankers carry chemicals or refined petroleum products, such as gasoline or jet fuel, but these ships do not readily alternate between carrying dirty oil (crude oil, residual fuel oil, asphalt) and refined (clean) petroleum products because the tanks would have to be extensively washed after carrying dirty product, a time-consuming and costly process. Some product vessels have fundamentally different designs from crude carriers and would require a layup in a shipyard to be converted to move crude oil.

Phillips 66 has chartered two Jones Act tankers to move crude oil from Eagle Ford, TX, to a refinery in Linden, NJ (in proximity to New York Harbor).³¹ Phillips 66 has stated that if more Jones Act-eligible tankers were available, it would like to receive 100,000 barrels a day of Eagle Ford oil at this refinery (it would need several tankers to accomplish this, the exact number depending on the size of the tankers).³² EIA data (which specify oil movement only between regions, not to individual refineries) indicate that over 13 months from January 2013 to the end of January 2014, an average of 22,000 barrels a day of Texas oil (8.5 million barrels total) were shipped by vessel to all U.S. Northeast refineries.³³ Meanwhile, over the same 13 months, twice as much Texas oil (17.1 million barrels) was shipped to refineries in eastern Canada, in foreign-flag tankers. The oil shipments from Texas to Canada cost approximately \$2 per barrel, compared with \$5 to \$6 per barrel for shipments from Texas to U.S. Northeast refineries in Jones Act-qualified tankers. The cost difference for a 300,000-barrel tanker amounts to around \$1 million, meaning that a Texas oil producer receives \$1 million less for its oil when shipping to U.S. Northeast refineries than when shipping to Canadian refineries.³⁴ The Bayway refinery also

²⁷ The law is codified at chapters 81, 121, and 551 of Title 46, *United States Code*.

²⁸ See for instance, "Oil and the Ghost of 1920," *Wall Street Journal*, September 13, 2012; Senate Committee on Energy and Natural Resources, Testimony of Faisal Khan, Managing Director, Integrated Oil and Gas Research, Citigroup. Hearing to Explore the Effects of Ongoing Changes in Domestic Oil Production, Refining and Distribution on U.S. Gasoline and Fuel Prices, July 16, 2013.

²⁹ U.S. Maritime Administration, Title XI Ship Financing Guarantees, Pending and Approved Loan Applications; American Petroleum Tankers S-1 SEC Filing; RS Platou Economic Research, annual and monthly reports; press releases from Teekay Tankers, Scorpio Tankers, and Euronav.

³⁰ U.S. Maritime Administration, U.S. Flag Privately Owned Merchant Fleet, Ongoing Self-propelled Vessels.

³¹ "Phillips 66 Charters Tankers To Bring Shale Oil To Bayway," *Argus Media*, December 13, 2012.

³² Phillips 66 presentation at Bank of America Merrill Lynch Refining Conference, March 6, 2014.

³³ U.S. Northeast refineries are clustered around New York Harbor and the Delaware River.

³⁴ This situation is somewhat similar to the Pacific Northwest lumber industry in the 1960s and 1970s, which asserted it (continued...)

receives 50,000 barrels of Bakken oil per day by rail, and is finishing construction of a rail unloading terminal with capacity of 75,000 barrels per day. The refinery has a capacity of 238,000 barrels per day. Its remaining sources of oil may be offshore oil from eastern Canada (with shipping rates fluctuating around \$1.20 per barrel) and Nigeria (with shipping rates around \$1.60 per barrel), as EIA data indicate these were the top two sources of foreign oil for Northeast refineries in 2013.³⁵

The Role of Tank Trucks

Tank trucks operating on U.S. roadways have been an important link in moving crude oil from domestic drilling sites to pipelines and rail terminals. A typical tank truck can hold 200 to 250 barrels of crude oil. Trucks readily serve the need for gathering product, as the hydraulic fracturing method of drilling employed in tight oil production involves multiple drilling sites in an area and the location of active wells is constantly in flux. A large volume of crude oil is being transported by truck between production areas and refineries in Texas because of the close proximity of the two.

Oil Spill Concerns

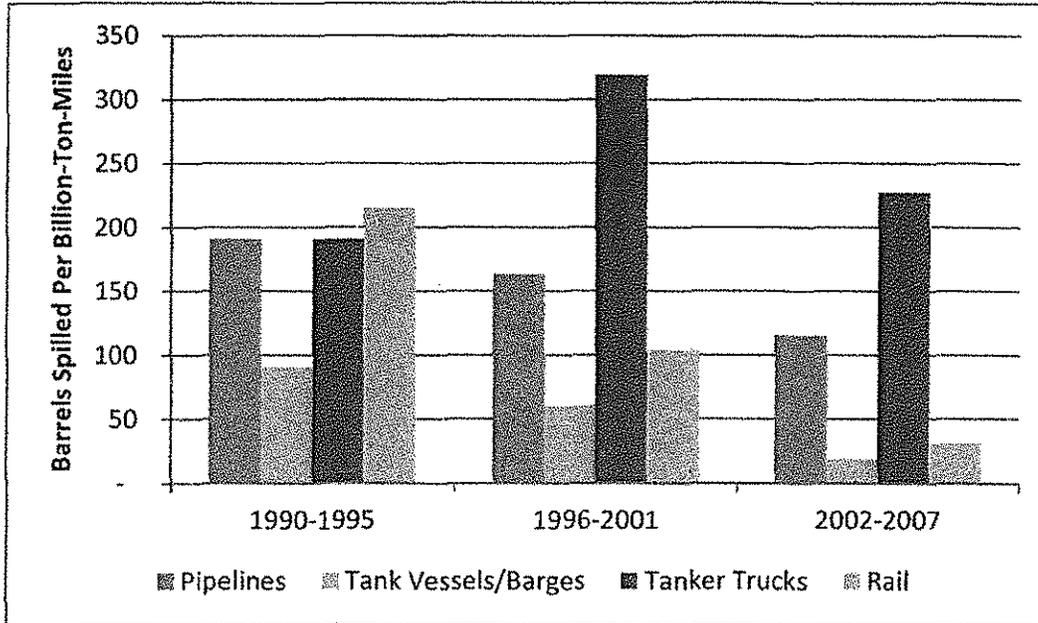
Each mode of oil transportation—pipelines, vessels, rail, and tanker trucks—involves some risk of oil spills. Over the period 1996-2007, railroads consistently spilled less crude oil per ton-mile than trucks or pipelines. Barges and domestic tanker ships have much lower spillage rates than trains (Figure 3). However, the data in Figure 3 precede the recent dramatic increase in oil transportation by rail.

(...continued)

could not compete with western Canadian lumber because the Canadians could ship at lower international freight rates to the U.S. East Coast. Washington and Oregon still load significant amounts of wood products on ships, but they all sail to foreign destinations.

³⁵ Shipping rates from Platts, *Oilgram Price Report*, January through April 2014 issues.

Figure 3. Oil Spill Volume per Billion-Ton-Miles
Crude Oil and Petroleum Products during Domestic Transportation



Sources: Prepared by CRS; oil spill volume data from Dagmar Etkin, *Analysis of U.S. Oil Spillage*, API Publication 356, August 2009; ton-mile data from Association of Oil Pipelines, *Report on Shifts in Petroleum Transportation: 1990-2009*, February 2012.

Notes: Pipelines include onshore and offshore pipelines. The time periods were chosen based on the available annual data for both spill volume and ton-miles. The values for each time period are averages of annual data for each six-year period.

Given the comparatively small capacity of a rail tank car, around 700 barrels, the total amount spilled from even a major derailment is likely to be small compared to the 260,000 barrels discharged in the 1989 grounding of the *Exxon Valdez* in Prince William Sound, AK, or the approximately 40,000 barrels discharged in the largest U.S. pipeline oil spill CRS can document, which occurred in 1991 near Grand Rapids, MN.³⁶ Nonetheless, spill volume is arguably a relatively unimportant factor in terms of impacts and cleanup costs. Location matters more: a major spill away from shore will likely cost considerably less to abate than a minor spill in a populated location or sensitive ecosystem. Depending on timing and location, even a small spill can cause significant harm to individual organisms and entire populations.³⁷

Although spillage per ton-mile of oil transported by rail declined over time, a recent series of major accidents (see the text box) has heightened concern about the risks involved in shipping crude by rail.

³⁶ Sources consulted include NOAA, *Oil Spill Case Histories, 1967-1991, Summaries of Significant U.S. and International Spills, 1992*; U.S. Coast Guard, *Notable Spills in U.S. Waters, Calendar Years 1989-2008, 2009*; Dagmar Etkin, *Analysis of U.S. Oil Spillage*, API Publication 356, August 2009; NOAA, *Incident News*, at <http://incidentnews.gov>; EPA, *Enforcement and Compliance History Online (ECHO)*, at <http://www.epa-echo.gov/echo/index.html>.

³⁷ National Research Council, *Oil in the Sea III: Inputs, Fates, and Effects* (Washington, DC: National Academies of Science, February 2003).

Oil by Rail Derailments in 2013 and 2014

Lac Mégantic, Quebec—On July 5, 2013, a train with 72 loaded tank cars of crude oil from North Dakota moving from Montreal, Quebec, to St. John, New Brunswick, stopped at Nantes, Quebec, at 11:00 pm. The operator and sole railroad employee aboard the train secured it and departed, leaving the train on shortline track with a descending grade of about 1.2%. At about 1:00 AM, it appears the train began rolling down the descending grade toward the town of Lac-Mégantic, about 30 miles from the U.S. border. Near the center of town, 63 tank cars derailed, resulting in multiple explosions and subsequent fires. There were 47 fatalities and extensive damage to the town. 2,000 people were evacuated. The initial determination was that the braking force applied to the train was insufficient to hold it on the 1.2% grade and that the crude oil released was more volatile than expected.

Gainford, Alberta—On October 19, 2013, nine tank cars of propane and four tank cars of crude oil from Canada derailed as a Canadian National train was entering a siding at 22 miles per hour. About 100 residents were evacuated. Three of the propane cars burned, but the tank cars carrying oil were pushed away and did not burn. No one was injured or killed. The cause of the derailment is under investigation.

Aliceville, Alabama—On November 8, 2013, a train hauling 90 cars of crude oil from North Dakota to a refinery near Mobile, AL, derailed on a section of track through a wetland near Aliceville, AL. Thirty tank cars derailed and some dozen of these burned. No one was injured or killed. The derailment occurred on a shortline railroad's track that had been inspected a few days earlier. The train was travelling under the speed limit for this track. The cause of the derailment is under investigation.

Casselton, North Dakota—On December 30, 2013, an eastbound BNSF Railway train hauling 106 tank cars of crude oil struck a westbound train carrying grain that shortly before had derailed onto the eastbound track. Some 34 cars from both trains derailed, including 20 cars carrying crude, which exploded and burned for over 24 hours. About 1,400 residents of Casselton were evacuated but no injuries were reported. The cause of the derailments and subsequent fire is under investigation.

Plaster Rock, New Brunswick—On January 7, 2014, 17 cars of a mixed train hauling crude oil, propane, and other goods derailed likely due to a sudden wheel or axle failure. Five tank cars carrying crude oil caught fire and exploded. The train reportedly was delivering crude from Manitoba and Alberta to the Irving Oil refinery in Saint John, New Brunswick. About 45 homes were evacuated but no injuries were reported.

Philadelphia, Pennsylvania—On January 20, 2014, 7 cars of a 101-car CSX train, including 6 carrying crude oil, derailed on a bridge over the Schuylkill River. No injuries and no leakage were reported, but press photographs showed two cars, one a tanker, leaning over the river.

Vandergrift, Pennsylvania—On February 13, 2014, 21 tank cars of a 120-car train derailed outside Pittsburgh. Nineteen of the derailed cars were carrying crude oil from western Canada, and four of them released product. There was no fire or injuries.

Lynchburg, Virginia—On April 30, 2014, 15 cars in a crude oil train derailed in the downtown area of this city. Three cars caught fire, and some cars derailed into a river along the tracks. The immediate area surrounding the derailment was evacuated. No injuries were reported.

In March and April 2013, there were two derailments of Canadian Pacific trains, one in western Minnesota and the other in Ontario, Canada; less than a tank car of oil leaked in each derailment and neither incident caused a fire.

The increasing deployment of unit trains changes the risks involved in shipping oil by rail in two ways. Unit trains of crude oil concentrate a large amount of potentially environmentally harmful and flammable material, increasing the probability that, should an accident occur, large fires and explosions could result. This risk is similar to that of unit trains carrying ethanol, and maybe greater than that of mixed freight trains in which various hazardous materials, such as explosives and toxic-by-inhalation materials, are sequenced among other cars according to federal regulations.³⁸ On the other hand, while unit trains concentrate a voluminous quantity of potentially dangerous material, they may offer safety benefits from avoiding the decoupling and

³⁸ These requirements are codified at 49 CFR §174.85.

re-coupling of cars in rail yards, which involve high-impact forces and introduce opportunity for human error.

Special Concerns About Canadian Dilbit

Oil companies generate substantial quantities of crude oil and related substances from the natural bitumen in oil sands, particularly deposits in Alberta, Canada. In 2012, the United States imported 438 million barrels of oil sands-derived crude oils, 125% more than in 2005.³⁹ Because bitumen is highly viscous, it is transported mostly in the form of diluted bitumen, or dilbit, containing naphtha or other materials that make it flow more easily.

Some commenters have argued that due to its physical characteristics, dilbit presents greater risks of oil spills than conventional crude, with potentially greater impacts to the environment.⁴⁰ Other stakeholders and organizations have questioned these conclusions.⁴¹ A study released by the National Research Council in 2013, conducted at the direction of Congress,⁴² found that the characteristics of dilbit do not increase the likelihood of spills.⁴³ The extent to which these findings are applicable to rail transport of crude is open to debate, as rail tanker cars may have different operating parameters (e.g., temperature) and physical standards (e.g., wall thickness), or may transport different forms of oil sands-derived crude oil, decreasing the relevance of the NRC findings.

However, observations in the aftermath of a 2010 pipeline spill are consistent with the assertion that dilbit may pose different hazards, and possibly different risks, than other forms of crude oil. On July 26, 2010, a pipeline owned by Enbridge Inc. released approximately 850,000 gallons of dilbit into Talmadge Creek, a waterway that flows into the Kalamazoo River in Michigan.⁴⁴ Three years after the spill, response activities continued,⁴⁵ because, according to EPA, the oil sands crude “will not appreciably biodegrade.”⁴⁶ The dilbit sank to the river bottom, where it mixed with sediment, and EPA has ordered Enbridge to dredge the river to remove the oiled sediment.⁴⁷ As a result of this order, Enbridge estimated in September 2013 its response costs would be approximately \$1.035 billion,⁴⁸ which is substantially higher than the average cost of cleaning up a similar amount of conventional oil.⁴⁹

³⁹ Data from Canada's National Energy Board. See also CRS Report R43128, *Oil Sands and the Oil Spill Liability Trust Fund: The Definition of "Oil" and Related Issues for Congress*, by Jonathan L. Ramseur.

⁴⁰ The primary vehicle for these arguments was a 2011 report from several environmental groups. See Anthony Swift et al., *Tar Sands Pipelines Safety Risks*, Joint Report by Natural Resources Defense Council, National Wildlife Federation, Pipeline Safety Trust, and Sierra Club, February 2011.

⁴¹ See, e.g., Crude Quality Inc., *Report regarding the U.S. Department of State Supplementary Draft Environmental Impact Statement*, May 2011; and Energy Resources Conservation Board, Press Release, “ERCB Addresses Statements in Natural Resources Defense Council Pipeline Safety Report,” February 2011.

⁴² P.L. 112-90, §16.

⁴³ National Research Council, *Effects of Diluted Bitumen on Crude Oil Transmission Pipelines*, 2013.

⁴⁴ National Transportation Safety Board, *Accident Report: Enbridge Incorporated Hazardous Liquid Pipeline Rupture and Release- Marshall, Michigan, July 25, 2010*, July 2012, at <http://www.ntsb.gov/>.

⁴⁵ For more up-to-date information, see EPA's Enbridge oil spill website at <http://www.epa.gov/enbridgespill/index.html>.

⁴⁶ Letter from Cynthia Giles, Environmental Protection Agency, to U.S. Department of State, April 22, 2013.

⁴⁷ EPA Removal Order, March 14, 2013, at <http://www.epa.gov/enbridgespill/ar/enbridge-AR-1720.pdf>.

⁴⁸ See Enbridge Inc., Third Quarter Financial Report, 2013, at <http://enbridge.com/InvestorRelations/> (continued...)

Special Concerns About Bakken Crude

The properties of Bakken shale oil are highly variable, even within the same oil field. In general, however, Bakken crude oil is much more volatile than other types of crude.⁵⁰ Its higher volatility may have important safety implications.¹

In January 2014, the Pipeline and Hazardous Materials Safety Administration (PHMSA) within the U.S. Department of Transportation (DOT) issued a safety alert warning that recent derailments and resulting fires indicate that crude oil being transported from the Bakken region may be more flammable than traditional heavy crude oil.⁵¹ PHMSA, whose rules are enforced by the Federal Railroad Administration with respect to railroads, reinforced the requirement to properly test, characterize, classify, and where appropriate sufficiently degasify hazardous materials prior to and during transportation. Under its initiative “Operation Classification,” PHMSA is to continue to collect samples and measure the characteristics of Bakken crude as well as oil from other locations.

Federal Oversight of Oil Transport by Rail

The Federal Railroad Administration (FRA) has jurisdiction over railroad safety. It has about 400 federal inspectors throughout the country and also utilizes state railroad safety inspectors. State inspectors predominantly enforce federal requirements because federal rail safety law preempts state law, and federal law is pervasive. The FRA uses past incident data to determine where its inspection activity should be targeted, although the FRA Administrator stated that in light of the growth of crude-by-rail transportation, the agency also must look for “pockets of risk.”⁵² FRA regulations cover the safety of track, grade crossings, rail equipment, operating practices, and movement of hazardous materials (hazmat). The Pipeline and Hazardous Materials Safety Administration within DOT (PHMSA) issues requirements for the safe transport of hazmat by all modes of transportation, which the FRA enforces with respect to railroads.⁵³

Rail incidents are investigated by the National Transportation Safety Board (NTSB), an independent federal agency. The NTSB makes recommendations toward preventing future incidents based on its findings.⁵⁴ Unlike the FRA, the NTSB is not required to weigh the costs

(...continued)

FinancialInformation/InvestorDocumentsandFilings.aspx.

⁴⁹ Based on cost estimates prepared in 2004. See Dagmar Etkin, *Modeling Oil Spill Response and Damages Costs*, Proceedings of the 5th Biennial Freshwater Spills Symposium, 2004, at <http://www.environmental-research.com>.

⁵⁰ Bryden, K. J., Grace Catalysts Technologies, Columbia, Maryland; Habib Jr., E. T., Grace Catalysts Technologies, Columbia, Maryland; Topete, O. A., Grace Catalysts Technologies, Houston, Texas, Processing shale oils in FCC: Challenges and opportunities 09.01.2013 <http://www.hydrocarbonprocessing.com/Article/3250397/Processing-shale-oils-in-FCC-Challenges-and-opportunities.html>.

⁵¹ Pipeline and Hazardous Materials Safety Administration, Safety Alert—January 2, 2014, Preliminary Guidance from OPERATION CLASSIFICATION. This advisory is a follow-up to the PHMSA and Federal Railroad Administration (FRA) joint safety advisory published November 20, 2013 [78 FR 69745].

⁵² FRA Administrator Szabo, Opening Remarks to RSAC Meeting, October 31, 2013; <http://www.fra.dot.gov/eLib/Details/L04852>.

⁵³ FRA and PHMSA are agencies within DOT, which has the emergency authority to restrict or prohibit transportation that poses a hazard of death, personal injury, or significant harm to the environment. See 49 U.S.C. §20104.

⁵⁴ The NTSB held a forum on the safety of crude oil and ethanol transport by rail April 22 and 23, 2014; (continued...)

against the benefits when considering additional safety measures and it has no regulatory authority. Many of the NTSB's recommendations concerning oil transport by rail are identical to those it previously issued for transporting ethanol by rail. While the FRA has largely agreed with NTSB's recommendations, its rulemaking process involves consultation with industry advisory committees, and it must determine which of the many rail safety measures under evaluation deserve priority. Implementing a change in FRA regulations can take years.

U.S. safety requirements apply to any train operating in the United States, regardless of its origin or destination. Canadian safety regulations are very similar but do not exactly mirror U.S. requirements. Cross-border shipments must meet the requirements of both countries. Safety standards established by the rail industry, which often exceed government requirements, apply to both U.S. and Canadian railroads.

When a rail incident results in the release of oil, state, territorial, or local officials are typically the first government representatives to arrive at the scene and initiate immediate safety measures to protect the public. The National Oil and Hazardous Substances Pollution Contingency Plan, often referred to as the National Contingency Plan (NCP), indicates that state, territorial, or local officials may be responsible for conducting evacuations of affected populations. These first responders also may notify the National Response Center to elevate an incident for federal involvement, at which point the coordinating framework of the NCP would be applied.

Unlike most federal emergency response plans, which are administrative mechanisms, the NCP is codified in federal regulation and is binding and enforceable.⁵⁵ The NCP regulations apply to applicable spills from vessels, pipelines, onshore facilities, and offshore facilities. The definition of "onshore facility" includes, but is not limited to "motor vehicles and rolling stock."⁵⁶

If an oil discharge affects navigable waterways, shorelines, or "natural resources belonging to, appertaining to, or under the exclusive management authority of the United States,"⁵⁷ Section 311 of the Clean Water Act, as amended by the Oil Pollution Act of 1990, Section 311(c), provides explicit federal authority to respond.⁵⁸ The term "discharge" is defined broadly and is not linked to specific sources of oil. The President has the authority to perform cleanup immediately using federal resources, monitor the response efforts of the spiller, or direct the spiller's cleanup activities.⁵⁹ Several executive orders have delegated the President's response authority to the Environmental Protection Agency (EPA) within the "inland zone" and to the U.S. Coast Guard

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<http://www.nts.gov/news/events/2014/railsafetyforum/>.

⁵⁵ 40 C.F.R. Part 112.

⁵⁶ 40 C.F.R. §300.5. This definition is also found in the Clean Water Act and OPA.

⁵⁷ The Oil Pollution Act of 1990 expanded and clarified the President's authorities under Section 311 of the Clean Water Act (33 U.S.C. §2701 et. seq.). For a more in-depth discussion of the Oil Pollution Act, see CRS Report RL33705, *Oil Spills in U.S. Coastal Waters: Background and Governance*, by Jonathan L. Ramseur.

⁵⁸ 33 U.S.C. §1321. In addition, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 expanded the authorities of the President to respond to releases of hazardous substances into the environment more broadly than CWA Section 311. See CRS Report R41039, *Comprehensive Environmental Response, Compensation, and Liability Act: A Summary of Superfund Cleanup Authorities and Related Provisions of the Act*, by David M. Bearden. For further details, see CRS Report R43251, *Oil and Chemical Spills: Federal Emergency Response Framework*, by David M. Bearden and Jonathan L. Ramseur.

⁵⁹ 33 U.S.C. §1321(c).

within the coastal zone, unless the two agencies agree otherwise.⁶⁰ The lead federal agency serves as the On-Scene Coordinator to direct the federal resources used in a federal response.

Regulations require that railroads have either a so-called “basic” response plan or a more “comprehensive” response plan, depending on the volume capacity of the rail car transporting the oil.⁶¹ Comprehensive plans are subject to FRA approval, and must ensure by contract or other means that personnel and equipment are able to handle a worst-case discharge.⁶² However, the regulatory threshold for the comprehensive response plan is a tank car holding more than 1,000 barrels, so does not apply to the DOT-111 tank cars used today, which hold around 700 barrels of oil apiece. For these smaller tank cars, railroads must prepare only “basic” response plans, which are not subject to FRA approval.

This threshold was established in 1996,⁶³ before the advent of oil unit trains, each of which may transport, in aggregate, approximately 70,000 barrels (almost 3 million gallons) of oil. The NTSB recently recommended that the threshold for comprehensive plans be lowered to take into account the use of unit trains.⁶⁴

Issues for Congress

While oil by rail has demonstrated benefits with respect to the efficient movement of oil from producing regions to market hubs, the dramatic increase in oil by rail shipments has generated interest in several related issues. These include railroad safety,⁶⁵ environmental concerns, and trade-offs over rail versus pipeline development.

Railroad Safety and Incident Response

Prior to the Lac Mégantic derailment, the FRA had increased its inspection activity with regard to trains carrying crude oil. After the derailment, the FRA and PHMSA (along with Transport Canada) initiated a comprehensive review of safety requirements.⁶⁶ Three areas of active discussion involve tank car design, prevention of derailments, and railroad operations. Railroads are an integrated system of fixed infrastructure, rolling equipment, and workers. Railroad safety

⁶⁰ Executive Order 12777, “Implementation of Section 311 of the Federal Water Pollution Control Act of October 18, 1972, as amended, and the Oil Pollution Act of 1990,” 56 *Federal Register* 54757, October 22, 1991.

⁶¹ 49 C.F.R. Part 130.

⁶² See 49 C.F.R. §130.31(a) with 49 C.F.R. §130.31(b).

⁶³ 61 *Federal Register* 30541 (June 17, 1996).

⁶⁴ NTSB, Safety Recommendation R-14-4 through -6, directed to PHMSA, January 21, 2014.

⁶⁵ U.S. Congress, House Committee on Transportation and Infrastructure, Subcommittee on Railroads, Pipelines, and Hazardous Materials, *Oversight of Passenger and Freight Rail Safety*, 113th Cong., 2nd sess., February 26, 2014; U.S. Congress, Senate Committee on Commerce, Science, and Transportation, Subcommittee on Surface Transportation and Merchant Marine Infrastructure, Safety, and Security, *Enhancing Our Rail Safety: Current Challenges for Passenger and Freight Rail*, 113th Cong., 2nd sess., March 6, 2014; U.S. Congress, Senate Committee on Appropriations, Subcommittee on Transportation and Housing and Urban Development, and Related Agencies, *Rail Safety*, 113th Cong., 2nd sess., April 9, 2014.

⁶⁶ See FRA’s Emergency Order No. 28 (78 *Federal Register* 48218), the agencies’ Joint Safety Advisory published August 7, 2013 (78 *Federal Register* 48224), referral of safety issues to FRA’s Railroad Safety Advisory Committee (78 *Federal Register* 48931), and a NPRM related to rail hazmat (78 *Federal Register* 54849).

experts note that improving safety performance requires recognition of the parameters and interactive effects among these components, and thus approaching railroad safety as an optimization problem is appropriate.⁶⁷ For instance, each additional safety feature on tank cars may increase their weight. This reduces the amount of product carried in each car due to track and bridge weight limits, potentially requiring additional tank cars to carry the same amount of product, and thus increasing the expected number of accidents.

In February 2014, the U.S. DOT reached an agreement with railroads under which they would voluntarily take measures to improve the safety of oil trains.⁶⁸ These measures include adding braking power; reducing train speeds to 40 mph through urban areas starting July 1 for trains with at least 20 tank cars of crude oil and at least one tank car of the older DOT-111 standard; installing additional wayside wheel bearing detectors by July 1; and other actions. Some of the measures the railroads agreed to are similar to those that the industry already takes for trains carrying “toxic-by-inhalation” hazardous materials. Reducing train speed can reduce the number of cars that derail, as well as the likelihood that product will be released from those tank cars.⁶⁹

Tank Car Safety Design

The U.S. DOT establishes construction standards for tank cars.⁷⁰ A tank car used for oil transport is roughly 60 feet long, about 11 feet wide, and 16 feet high (see **Figure 4**). It weighs 80,000 pounds empty and 286,000 pounds when full. It can hold about 30,000 gallons or 715 barrels of oil, depending on the oil’s density. The tank is made of steel plate, 7/16 of an inch thick (see 49 C.F.R. §179.201).⁷¹ An oil tank car is typically loaded from the top valve and unloaded from the bottom valve. Loading or unloading each car may take several hours, but multiple cars in a train can be loaded or unloaded simultaneously.

⁶⁷ Xiang Liu, M. Rapik Saat, Christopher P.L. Barkan, *Safety Effectiveness of Integrated Risk Reduction Strategies for the Transportation of Hazardous Materials by Rail*, paper presented at the Transportation Research Board, Annual Meeting 2013, paper no. 13-1811.

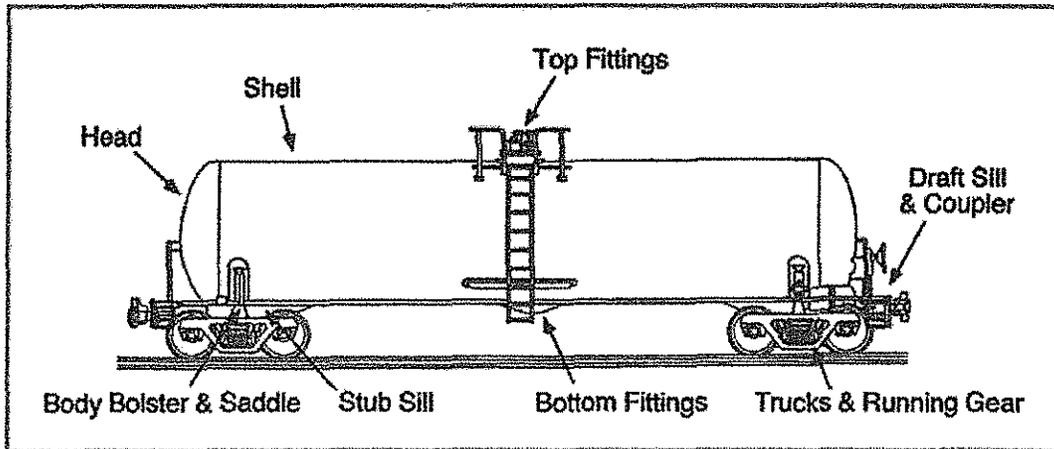
⁶⁸ AAR, “Freight Railroads Join U.S. Transportation Secretary Foxx in Announcing Industry Crude By Rail Safety Initiative,” February 21, 2014.

⁶⁹ Athaphon Kawprasert and Christopher P.L. Barkan, “Effect of Train Speed on Risk Analysis of Transporting Hazardous Materials by Rail,” *Transportation Research Record*, No. 2159, 2010, pp. 59-68.

⁷⁰ The tank cars used to transport crude oil fall under DOT specification 111. See 49 C.F.R. §179.

⁷¹ 49 C.F.R. §179.201.

Figure 4. Non-jacketed, Non-pressure Tank Car



In some incidents, oil has been released from tank cars because the coupler from a neighboring car punctured the tank during derailment. Valves at the top and bottom of the cars have also been sheared off or otherwise opened during derailment. Efforts to improve crashworthiness have focused on reinforcing the shells of tank cars at both ends and/or along the sides with a “jacket” of steel, adding protective head shields at both ends, modifying couplers to prevent decoupling, adding skid protection or diversion shields to protruding valves and modifying pressure relief valves, eliminating or modifying bottom valves so that handles break off rather than opening the valve during derailment, and increasing insulation for fire protection.⁷²

The FRA and PHMSA have questioned whether Bakken crude oil, given its characteristics, would more properly be carried in tank cars that have additional safety features, such as those found on pressurized tank cars used for hauling explosive liquids.⁷³ The railroad industry established additional standards in October 2011 for newly built cars that address some but not all of the safety features that the FRA and PHMSA are considering.

Rail cars have an economic life of 30 to 40 years, so conversion of the fleet to a new car standard could take some time. DOT has asked for further information on the costs and benefits of retrofitting the existing fleet.⁷⁴ In November 2013, the Association of American Railroads stated it supports either retrofitting or phasing out oil tank cars built before October 2011 (a fleet of about 78,000 cars) and modifying those built after October 2011 (about 14,000 cars).⁷⁵ Some Members of Congress have urged DOT to expedite the rulemaking process concerning new tank car safety requirements.⁷⁶

⁷² For a discussion of NTSB’s recommendations concerning DOT-111 tank cars, in reference to the derailment of an ethanol unit train in Cherry Valley, IL, see NTSB Safety Recommendation R-12-5 through -8, March 2, 2012.

⁷³ Pressurized tank cars (DOT specification 105 and 112) have thicker shells and heads, metal jackets, strong protective housings for top fittings, and no bottom valves.

⁷⁴ 78 FR 54849 - 54861, September 6, 2013.

⁷⁵ For comments filed on this rulemaking see <http://www.regulations.gov> and search under docket no. PHMSA-2012-0082.

⁷⁶ See letter from Senator Schumer to PHMSA and FRA dated July 22, 2013 and news release by Senator Hoeven on January 15, 2013 indicating that a DOT final rule on tank cars would not be issued until after January 2015.

In February 2014, BNSF announced that it would purchase 5,000 tank cars with safety features that surpass those specified in the October 2011 industry standard (shell thickness would be 9/16 of an inch thick, and they would be jacketed). In April 2014, Transport Canada announced that the oldest DOT-111 tank cars (about 5,000 that lack bottom reinforcement) would no longer be allowed for use in transporting dangerous goods, and the remaining fleet would either be phased out or retrofitted within three years.⁷⁷ Transport Canada expects to finalize regulations by the summer of 2014. Reportedly, the U.S. DOT submitted its proposed regulations on tank car safety design to the Office of Management and Budget for review at the end of April 2014.⁷⁸ Final U.S. regulations are expected in the summer of 2014, and expected to be in harmony with Canadian regulations. Railroads, shippers, and tank car builders could issue their own standard, but they have not reached agreement on all safety features to be required.

Preventing Derailments

An analysis of freight train derailments from 2001 to 2010 on Class I railroads' mainline track found that broken rails or track welds were the leading cause of derailments, by far.⁷⁹ These problems caused 670 derailments over the period, while the next leading problem (track geometry defects) caused just over 300 derailments. Broken rails or welds also resulted in more severe incidents, derailing an average of 13 railroad cars instead of 8.6 cars for all other causes. Broken rails or welds accounted for 23% of total cars derailed. A separate study covering the same time period found that track problems were the most important causes of derailments, followed by problems with train equipment.⁸⁰

In the Rail Safety Improvement Act of 2008 (P.L. 110-432, Section 403(a)), Congress requested that the FRA study and consider revising the frequency and methods of track inspection. The FRA conducted the study and on January 24, 2014 issued a final rule on improving rail integrity.⁸¹ The new rule requires railroads to achieve a specified track failure rate rather than scheduling inspections based on the calendar or traffic volume. It also allows railroads to maximize use of rail inspection vehicle time by prioritizing remedial action when track defects are detected. While the rule requires railroads to achieve a lower track failure rate for track that has higher speed limits, or carries passengers or hazardous material, it does not require lower failure rates for track travelling through populated areas or otherwise consider the affected area around the track in the event of a derailment.⁸²

The final rule states that it “codifies standard industry good practices,” and notes that railroads “were already initiating and implementing the development of a performance-based risk

⁷⁷ Transport Canada, “Addressing the safety of DOT-111 tank cars carrying dangerous goods,” April 23, 2014.

⁷⁸ CQ News, “Oil Train Regulations Couldn’t Come Soon Enough For Some Railroads,” May 1, 2014.

⁷⁹ T87.6 Task Force Summary Report, pp. 9-11; Xiang Liu, M. Rapik Saat, Christopher P.L. Barkan, “Analysis of Causes of Major Train Derailment and Their Effect on Accident Rates,” *Transportation Research Record*, No. 2289, 2012, pp. 154-163.

⁸⁰ Xiang Liu, M. Rapik Saat, Christopher P.L. Barkan, *Safety Effectiveness of Integrated Risk Reduction Strategies for the Transportation of Hazardous Materials by Rail*, Paper presented at the Transportation Research Board, Annual Meeting 2013, paper no. 13-1811.

⁸¹ 79 *Federal Register* 4234, January 24, 2014.

⁸² This risk element has been studied by Xiang Liu, University of Illinois at Urbana-Champaign—RailTEC, Presentation at Transportation Research Board Annual Meeting, Session 279, *Broken Rail Prevention and Rail Flaw Assessment*, Washington, DC, January 13, 2014.

management concept for determination of rail inspection frequency,” meaning that railroads generally have been testing more frequently than required.⁸³ Large railroads divide their network into hundreds of segments, and determine inspection frequency for each segment based on past inspection results, past history of undetected defects, track tonnage, climate (namely temperature), signaling system (or absence) over segment, whether track carries toxic-by-inhalation materials, and whether track is within 500 feet of a structure.⁸⁴ They have vehicles to detect defects within the steel of the rail, and others that detect defects in track geometry. From 1980 to 2012, railroads reduced the number of accidents releasing hazmat product per 100,000 hazmat carloads from 14 to 1.⁸⁵

As part of the February 2014 agreement with DOT referenced above, railroads will perform one additional internal-rail inspection each year than required by the FRA on routes over which trains carrying 20 or more tank cars of crude oil travel, and will conduct at least two high-tech track geometry inspections over these routes. Congress may want to look into research on track defect detection technology, including the feasibility of installing equipment on locomotives to achieve near-continuous rail testing.⁸⁶

Shortline Track

It is often the case that a Class I railroad, prior to turning over the operation of a line to a shortline, did not maintain it to the same standards as busier mainlines. Shippers using a shortline often do not require higher-speed track because they ship infrequently or because the commodities they ship are not time-sensitive. Thus, shortline track is frequently maintained at a lower standard than Class I railroads’ track. The Lac Mégantic, Quebec, and Aliceville, AL, crude oil derailments occurred on shortline track. Members of Congress have been concerned with preserving shortline rail service, reflected in a federal loan program for track rehabilitation and improvement and a tax credit for shortline track maintenance.⁸⁷

Railroad Operations

A number of specific operational issues have been found relevant to railroad safety, in general, or to oil by rail transportation specifically.

Terminal Operations

In September 2013, the FRA solicited public comment on whether current regulations concerning transfer of crude oil from and to tank cars are adequate considering recent practices at transload facilities. Its request for public comment asked for information about what entity controls trains

⁸³ 79 *Federal Register* 4234 and 4245, January 24, 2014.

⁸⁴ Presentations of BNSF and UP Railroads, Transportation Research Board Annual Meeting, Washington, DC, January 13, 2014, Session 279, *Broken Rail Prevention and Rail Flaw Assessment*.

⁸⁵ Christopher P.L. Barkan, M. Rapik Saat, and Francisco Gonzalez III et al., “Cooperative Research in Tank Car Safety Design,” *TR News*, vol. 286 (May-June 2013), pp. 12-19.

⁸⁶ This topic was briefly discussed at the NTSB forum on rail safety cited above.

⁸⁷ The Railroad Rehabilitation and Improvement Financing (RRIF) program and Section 45G of the tax code.

on loop tracks at rail loading terminals and what procedures have been adopted to prevent unintended movement during loading.⁸⁸

Railroad Crew Size

Following the Lac Mégantic disaster, legislation (H.R. 3040) was introduced in Congress to require two-person crews on all trains. In the United States, the FRA does not specify in regulation how many persons must operate a train, but notes that the various tasks required while a train is moving essentially necessitate at least a two-person crew. Most trains operate with an engineer and a conductor, but some shortline railroads may operate trains with a single crew member. The FRA has announced it intends to issue a proposed rule requiring two-person crews while allowing for some exceptions.⁸⁹ One potential trade-off is that distraction by a fellow crew member has been found to be a factor in past accidents.⁹⁰

Positive Train Control

Railroads are in the process of implementing positive train control (PTC), a system that is designed to override human error in controlling the speed and movement of trains. Congress required that this system be installed on routes carrying passengers or poison- or toxic-by-inhalation hazardous materials (Section 104 of P.L. 110-432), a requirement that applies to about 60,000 miles of railroad. Current law does not require installation of PTC solely because a track carries crude oil, but the law authorizes the FRA to expand the scope of tracks required to have PTC. PTC is not required on track in or near rail yards. The cost and timeline for implementing PTC are topics of current debate among policy makers and stakeholders.⁹¹

Route Selection

In the Implementing Recommendations of the 9/11 Commission Act of 2007 (P.L. 110-53, Section 1551), Congress required railroads carrying certain kinds and quantities of potentially dangerous commodities to assess the safest and most secure routes for trains carrying these products and to minimize delays and storage for rail cars containing these products. These requirements currently apply to explosive, toxic-by-inhalation, and radioactive material.⁹² Security regulations also require that rail cars containing these commodities not be left unattended when being transferred from one carrier to another or between carrier and shipper.⁹³ The law resulted from efforts by cities like Washington, DC, and Pittsburgh to ban trains carrying hazardous materials.⁹⁴ The FRA may consider whether this routing analysis should also apply to

⁸⁸ "FRA/PHMSA Additional Questions for Public Comment," Docket No. FRA-2013-0067-0016, 9/4/2013, <http://www.regulations.gov>.

⁸⁹ Press Release no. FRA-03-14, April 9, 2014.

⁹⁰ NTSB, *Collision of Two CN Freight Trains, Anding, Mississippi, July 10, 2005*, Accident Report RAR-07/01, p. 31.

⁹¹ For further information, see CRS Report R42637, *Positive Train Control (PTC): Overview and Policy Issues*, by John Frittelli.

⁹² See 49 C.F.R. §172.820; 73 *Federal Register* 72182, November 26, 2008.

⁹³ See 49 C.F.R. §1580.107.

⁹⁴ *U.S. Rail News*, June 11, 2008, pp. 1-2; "Hazmat Hazards: U.S. Cities may not wait for Washington Before Trying to Reroute their own hazmat trains," *Journal of Commerce*, December 12, 2005.

unit trains of crude oil.⁹⁵ As part of the February 2014 agreement with DOT mentioned above, railroads agreed to perform this routing analysis for oil trains beginning July 1, 2014. Such a requirement would be controversial because avoiding large urban areas can increase the length of time such trains are in transit and because smaller towns and rural areas likely have less capability to respond to emergencies than large cities. Also, it is unclear to what extent alternative routes are available.

Incident and Oil Spill Response

The increased use of rail for crude oil shipments is likely to increase the number of incidents, some of which may involve oil spills. As described above, the National Oil and Hazardous Substances Contingency Plan provides a framework for federal, state and local collaboration in response to releases of oil and hazardous substances. Considering the relative proximity of rail shipments to population centers, a potential issue for Congress is the safety and adequacy of spill response.

In addition, based on past history, increased frequency or severity of incidents related to shipments of crude oil by rail could lead some local communities to seek additional funding to ensure adequate spill response capabilities, including personnel, training, equipment, and community notification.

The Accuracy of Train Cargo Information

Crude oil may sometimes be carried by “mixed trains”—trains carrying a variety of different commodities. With mixed trains, it is important to first responders that they have an accurate list of which cars contain what commodities (the train “consist”). Often the sequencing of cars changes en route, so the consist information provided by the crew at the scene of an incident may no longer be accurate. Although all vehicles containing hazardous materials must display placards indicating their potential dangerous characteristics (e.g., flammable, corrosive, explosive), responders often need more specific information about the commodities involved in an incident. One potential remedy under consideration is an electronic manifest system that would offer the capability of easier updates. In MAP-21, Congress authorized PHMSA to conduct pilot projects on paperless hazmat information sharing among carriers (of various modes including rail) and first responders.⁹⁶ A potential drawback raised by the railroads is that electronic devices at the scene of an incident could encounter technical problems. Another remedy is greater diligence by railroad crew in keeping the paper consist up to date. The NTSB has asked whether a copy of the consist should also be kept at the end of a train in case the copy kept by the crew at the head of the train is lost in an incident.

Rail vs. Pipeline Development

Certain rail routings of crude oil could be replaced by reconfiguring the existing pipeline network and constructing additional pipeline capacity. In general, pipelines could provide safer, less

⁹⁵ RSAC meeting, presentation by HAZMAT Working Group, October 31, 2013. The NTSB has recommended this change; see Safety Recommendation R-14-1 through -3, January 23, 2014.

⁹⁶ Section 33005 of P.L. 112-141.

expensive transportation than railroads, assuming that pipeline developers are able to assure markets for the oil they hope to carry.

Pipeline development could be particularly important for shipments of crude oil from Canada to the United States. In light of growing Canadian exports, several proposals have been made to expand the cross-border pipeline infrastructure. Of the five major pipelines currently linking Canadian petroleum producing regions to markets in the United States, two (Alberta Clipper and Keystone) began service in 2010. A permit application for a sixth pipeline, Keystone XL, a very large project which would also transport some Bakken crude, was initially submitted in 2008 and is in the final stages of review by the U.S. Department of State.⁹⁷ Keystone XL has been the subject of intense scrutiny and debate by Congress, the executive branch, and numerous stakeholders. The Keystone XL review and approval process is highly contested, and the pipeline's approval remains uncertain.

Other proposed oil pipeline projects, such as the reversal of the Portland-Montreal oil pipeline to enable export of Canadian oil via a marine terminal in Maine, are also encountering greater public scrutiny and opposition. On the whole, the barriers to new oil pipeline approval in any jurisdiction seem to have risen significantly since Alberta Clipper and Keystone were completed.

Shipment of oil by rail is, in many cases, an alternative to new pipeline development. This involves tradeoffs in terms of both transportation capacity and safety. In its ongoing review of the Keystone XL pipeline proposal, the State Department has argued that, if the pipeline is not constructed, additional oil-by-rail capacity will be developed instead. As the State Department's 2014 Final Environmental Impact Statement for the Keystone XL project states,

In the past 2 years, there has been exponential growth in the use of rail to transport crude oil throughout North America, primarily originating from the Bakken in North Dakota and Montana, but also increasingly utilized in other production areas, including the [Western Canadian Sedimentary Basin]. Because of the flexibility of rail delivery points, once loaded onto trains the crude oil could be delivered to refineries, terminals, and/or port facilities throughout North America, including the Gulf Coast area.⁹⁸

Consistent with this view, both Canadian National Railway and Canadian Pacific Railway reportedly have been pursuing a "pipeline on rails" business strategy, including new track investments, to move Canadian crudes to new markets throughout North America.⁹⁹ Increasing cross-border movements of crude oil by rail on existing track does not require State Department approval, so such an approach seeks to avoid regulatory delays. While the potential volumes associated with rail transportation of crude could be lower than pipeline volumes, they could still be significant. Some analysts have suggested that oil-by-rail volumes could be large enough to make a major new pipeline project like Keystone XL unnecessary.¹⁰⁰ Similar arguments could apply to other oil transportation corridors within North America.

Others are less certain that oil by rail can substitute so readily for pipeline capacity, as rail expansion would require significant infrastructure development including loading and unloading

⁹⁷ The construction, connection, operation, and maintenance of a pipeline connecting the United States with a foreign country require executive permission through a Presidential Permit under Executive Orders 11423 and 13337.

⁹⁸ U.S. Department of State, January 2014, Final EIS, Section 5.1, "No Action Alternatives."

⁹⁹ Nathan Vanderklippe, "CN, CP Push for a 'Pipeline on Rails,'" *Globe and Mail*, February 7, 2011.

¹⁰⁰ "Keystone Pipeline Seen as Unneeded as More Oil Moves by Rail," *CBC News*, September 10, 2013.

facilities, track capacity, and, possibly, additional tank car availability. The State Department's analysis finds that under certain conditions, including particular oil and oil transportation prices, "there could be a substantial impact on oil sands production levels."¹⁰¹ Other market analyses similarly find that in the short and medium term some production could be curtailed.¹⁰²

Refiner economics may ultimately favor pipelines over rail, although those investment decisions will be determined by market forces. When it comes to safety, however, the federal government plays a major role, and thus may have considerable influence on infrastructure expansion. Some participants in the Keystone XL debate, for example, have asserted that recent oil-by-rail incidents underscore the need for a new pipeline as, in their view, a safer mode of transportation for Canadian crudes,¹⁰³ while others insist that safety comparisons between the two transportation modes are less conclusive.¹⁰⁴ On balance, however, it seems likely that policies that raise the cost of transporting oil by rail would increase the attractiveness of pipeline development, and, for that matter, expansion of crude oil transportation by barges, tanker ships, and tanker trucks.

Rail vs. Waterborne Transport

As indicated above, the cost of transporting oil along the coasts in Jones Act tankers is much less than by railroad. However, the fleet of Jones Act-qualified tankers is insufficient to take advantage of this lower-cost shipping method. Despite the domestic oil boom, coastal refineries continue to rely on foreign sources of oil that are shipped at rates generally ranging from less than a dollar per barrel (Mexico to the Gulf Coast) to less than \$2.50 a barrel (Saudi Arabia to the Atlantic Coast).¹⁰⁵ In addition to efficient transport, safety is a concern. Tankers are not a new transport method. Tankers are double-hulled, operators are required to have resources and equipment nearby in case of a spill, and the Coast Guard has a regulatory regime in place to promote safe transits through harbors. While the risk of an oil spill in a marine environment remains a grave concern, coastal transport largely avoids travel through towns and cities. The railroads have had difficulty in dealing with the surge in oil traffic, and other rail users are experiencing severe service disruptions in the upper Midwest. An important but open question is whether more oil would be moving by coastwise shipping, relieving some of the safety and capacity pressure on railroads, if tankers were available and their operating costs more competitive. The CEO of Phillips 66 has stated, "I think our view is that because of the limitations on Jones Act vessels, that's going to push you to more barge and more rail, just to evacuate the Gulf Coast."¹⁰⁶

¹⁰¹ 2014 Final EIS, p. 1.4-8.

¹⁰² For example, Canadian Imperial Bank of Commerce, "Too Much of A Good Thing: A Deep Dive Into The North American Energy Renaissance," August 15, 2012; TD Economics, "Pipeline Expansion is a National Priority," Special Report, December 17, 2012; International Energy Agency, "Medium-Term Oil Market Report," May 14, 2013.

¹⁰³ Diana Furchtgott-Roth and Kenneth P. Green, *Intermodal Safety in the Transport of Oil*, Fraser Institute, October 2013, <http://www.fraserinstitute.org/uploadedFiles/fraser-ca/Content/research-news/research/publications/intermodal-safety-in-the-transport-of-oil.pdf>.

¹⁰⁴ See, for example: Rory Johnston, "Train vs. Pipeline: What's the Safest Way to Transport Oil?" *Christian Science Monitor*, Energy Voices blog, October 22, 2013, <http://www.csmonitor.com/Environment/Energy-Voices/2013/1022/Train-vs.-pipeline-What-s-the-safest-way-to-transport-oil>.

¹⁰⁵ Platts, *Oilgram Price Report*, January through April 2014.

¹⁰⁶ Phillips 66 Earnings Conference Call, Q2 2013, July 31, 2013.

Rail Transport and Crude Oil Exports

The large increase in U.S. oil production has led some Members of Congress to advocate changing the law that generally prohibits exports of crude oil.¹⁰⁷ An increase in crude oil exports would likely require greater use of rail transportation, as the crude oil pipeline network is not oriented to serve export ports. Some environmental groups have stated their opposition to construction of new rail facilities or terminals that would facilitate oil exports, as they believe increased exports will encourage environmentally damaging production in the United States and Canada.¹⁰⁸

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¹⁰⁷ The Senate Energy and Natural Resources Committee held a hearing on this issue on January 30, 2014. For further information and analysis on oil exports, see CRS Report R43442, *U.S. Crude Oil Export Policy: Background and Considerations*, by Phillip Brown et al.

¹⁰⁸ See, for example, the comments of Sierra Club official Michael Marx in Blake Sobczak, "Environmentalists 'get real creative' to combat oil by rail," *Energy Wire*, January 13, 2014.

Oil by Rail Derailments in 2013 and 2014

Lac Mégantic, Quebec—On July 5, 2013, a train with 72 loaded tank cars of crude oil from North Dakota moving from Montreal, Quebec, to St. John, New Brunswick, stopped at Nantes, Quebec, at 11:00 pm. The operator and sole railroad employee aboard the train secured it and departed, leaving the train on shortline track with a descending grade of about 1.2%. At about 1:00 AM, it appears the train began rolling down the descending grade toward the town of Lac-Mégantic, about 30 miles from the U.S. border. Near the center of town, 63 tank cars derailed, resulting in multiple explosions and subsequent fires. There were 47 fatalities and extensive damage to the town. 2,000 people were evacuated. The initial determination was that the braking force applied to the train was insufficient to hold it on the 1.2% grade and that the crude oil released was more volatile than expected.

Gainford, Alberta—On October 19, 2013, nine tank cars of propane and four tank cars of crude oil from Canada derailed as a Canadian National train was entering a siding at 22 miles per hour. About 100 residents were evacuated. Three of the propane cars burned, but the tank cars carrying oil were pushed away and did not burn. No one was injured or killed. The cause of the derailment is under investigation.

Aliceville, Alabama—On November 8, 2013, a train hauling 90 cars of crude oil from North Dakota to a refinery near Mobile, AL, derailed on a section of track through a wetland near Aliceville, AL. Thirty tank cars derailed and some dozen of these burned. No one was injured or killed. The derailment occurred on a shortline railroad's track that had been inspected a few days earlier. The train was travelling under the speed limit for this track. The cause of the derailment is under investigation.

Casselton, North Dakota—On December 30, 2013, an eastbound BNSF Railway train hauling 106 tank cars of crude oil struck a westbound train carrying grain that shortly before had derailed onto the eastbound track. Some 34 cars from both trains derailed, including 20 cars carrying crude, which exploded and burned for over 24 hours. About 1,400 residents of Casselton were evacuated but no injuries were reported. The cause of the derailments and subsequent fire is under investigation.

Plaster Rock, New Brunswick—On January 7, 2014, 17 cars of a mixed train hauling crude oil, propane, and other goods derailed likely due to a sudden wheel or axle failure. Five tank cars carrying crude oil caught fire and exploded. The train reportedly was delivering crude from Manitoba and Alberta to the Irving Oil refinery in Saint John, New Brunswick. About 45 homes were evacuated but no injuries were reported.

Philadelphia, Pennsylvania—On January 20, 2014, 7 cars of a 101-car CSX train, including 6 carrying crude oil, derailed on a bridge over the Schuylkill River. No injuries and no leakage were reported, but press photographs showed two cars, one a tanker, leaning over the river.

Vandergrift, Pennsylvania—On February 13, 2014, 21 tank cars of a 120-car train derailed outside Pittsburgh. Nineteen of the derailed cars were carrying crude oil from western Canada, and four of them released product. There was no fire or injuries.

Lynchburg, Virginia—On April 30, 2014, 15 cars in a crude oil train derailed in the downtown area of this city. Three cars caught fire, and some cars derailed into a river along the tracks. The immediate area surrounding the derailment was evacuated. No injuries were reported.

In March and April 2013, there were two derailments of Canadian Pacific trains, one in western Minnesota and the other in Ontario, Canada; less than a tank car of oil leaked in each derailment and neither incident caused a fire.

The increasing deployment of unit trains changes the risks involved in shipping oil by rail in two ways. Unit trains of crude oil concentrate a large amount of potentially environmentally harmful and flammable material, increasing the probability that, should an accident occur, large fires and explosions could result. This risk is similar to that of unit trains carrying ethanol, and maybe greater than that of mixed freight trains in which various hazardous materials, such as explosives and toxic-by-inhalation materials, are sequenced among other cars according to federal regulations.³⁸ On the other hand, while unit trains concentrate a voluminous quantity of potentially dangerous material, they may offer safety benefits from avoiding the decoupling and

³⁸ These requirements are codified at 49 CFR §174.85.

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re-coupling of cars in rail yards, which involve high-impact forces and introduce opportunity for human error.

Special Concerns About Canadian Dilbit

Oil companies generate substantial quantities of crude oil and related substances from the natural bitumen in oil sands, particularly deposits in Alberta, Canada. In 2012, the United States imported 438 million barrels of oil sands-derived crude oils, 125% more than in 2005.³⁹ Because bitumen is highly viscous, it is transported mostly in the form of diluted bitumen, or dilbit, containing naphtha or other materials that make it flow more easily.

Some commenters have argued that due to its physical characteristics, dilbit presents greater risks of oil spills than conventional crude, with potentially greater impacts to the environment.⁴⁰ Other stakeholders and organizations have questioned these conclusions.⁴¹ A study released by the National Research Council in 2013, conducted at the direction of Congress,⁴² found that the characteristics of dilbit do not increase the likelihood of spills.⁴³ The extent to which these findings are applicable to rail transport of crude is open to debate, as rail tanker cars may have different operating parameters (e.g., temperature) and physical standards (e.g., wall thickness), or may transport different forms of oil sands-derived crude oil, decreasing the relevance of the NRC findings.

However, observations in the aftermath of a 2010 pipeline spill are consistent with the assertion that dilbit may pose different hazards, and possibly different risks, than other forms of crude oil. On July 26, 2010, a pipeline owned by Enbridge Inc. released approximately 850,000 gallons of dilbit into Talmadge Creek, a waterway that flows into the Kalamazoo River in Michigan.⁴⁴ Three years after the spill, response activities continued,⁴⁵ because, according to EPA, the oil sands crude “will not appreciably biodegrade.”⁴⁶ The dilbit sank to the river bottom, where it mixed with sediment, and EPA has ordered Enbridge to dredge the river to remove the oiled sediment.⁴⁷ As a result of this order, Enbridge estimated in September 2013 its response costs would be approximately \$1.035 billion,⁴⁸ which is substantially higher than the average cost of cleaning up a similar amount of conventional oil.⁴⁹

³⁹ Data from Canada's National Energy Board. See also CRS Report R43128, *Oil Sands and the Oil Spill Liability Trust Fund: The Definition of "Oil" and Related Issues for Congress*, by Jonathan L. Ramseur.

⁴⁰ The primary vehicle for these arguments was a 2011 report from several environmental groups. See Anthony Swift et al., *Tar Sands Pipelines Safety Risks*, Joint Report by Natural Resources Defense Council, National Wildlife Federation, Pipeline Safety Trust, and Sierra Club, February 2011.

⁴¹ See, e.g., Crude Quality Inc., *Report regarding the U.S. Department of State Supplementary Draft Environmental Impact Statement*, May 2011; and Energy Resources Conservation Board, Press Release, “ERCB Addresses Statements in Natural Resources Defense Council Pipeline Safety Report,” February 2011.

⁴² P.L. 112-90, §16.

⁴³ National Research Council, *Effects of Diluted Bitumen on Crude Oil Transmission Pipelines*, 2013.

⁴⁴ National Transportation Safety Board, *Accident Report: Enbridge Incorporated Hazardous Liquid Pipeline Rupture and Release- Marshall, Michigan, July 25, 2010*, July 2012, at <http://www.nts.gov/>.

⁴⁵ For more up-to-date information, see EPA's Enbridge oil spill website at <http://www.epa.gov/enbridgespill/index.html>.

⁴⁶ Letter from Cynthia Giles, Environmental Protection Agency, to U.S. Department of State, April 22, 2013.

⁴⁷ EPA Removal Order, March 14, 2013, at <http://www.epa.gov/enbridgespill/ar/enbridge-AR-1720.pdf>.

⁴⁸ See Enbridge Inc., Third Quarter Financial Report, 2013, at <http://enbridge.com/InvestorRelations/> (continued...)

Special Concerns About Bakken Crude

The properties of Bakken shale oil are highly variable, even within the same oil field. In general, however, Bakken crude oil is much more volatile than other types of crude.⁵⁰ Its higher volatility may have important safety implications.¹

In January 2014, the Pipeline and Hazardous Materials Safety Administration (PHMSA) within the U.S. Department of Transportation (DOT) issued a safety alert warning that recent derailments and resulting fires indicate that crude oil being transported from the Bakken region may be more flammable than traditional heavy crude oil.⁵¹ PHMSA, whose rules are enforced by the Federal Railroad Administration with respect to railroads, reinforced the requirement to properly test, characterize, classify, and where appropriate sufficiently degasify hazardous materials prior to and during transportation. Under its initiative “Operation Classification,” PHMSA is to continue to collect samples and measure the characteristics of Bakken crude as well as oil from other locations.

Federal Oversight of Oil Transport by Rail

The Federal Railroad Administration (FRA) has jurisdiction over railroad safety. It has about 400 federal inspectors throughout the country and also utilizes state railroad safety inspectors. State inspectors predominantly enforce federal requirements because federal rail safety law preempts state law, and federal law is pervasive. The FRA uses past incident data to determine where its inspection activity should be targeted, although the FRA Administrator stated that in light of the growth of crude-by-rail transportation, the agency also must look for “pockets of risk.”⁵² FRA regulations cover the safety of track, grade crossings, rail equipment, operating practices, and movement of hazardous materials (hazmat). The Pipeline and Hazardous Materials Safety Administration within DOT (PHMSA) issues requirements for the safe transport of hazmat by all modes of transportation, which the FRA enforces with respect to railroads.⁵³

Rail incidents are investigated by the National Transportation Safety Board (NTSB), an independent federal agency. The NTSB makes recommendations toward preventing future incidents based on its findings.⁵⁴ Unlike the FRA, the NTSB is not required to weigh the costs

(...continued)

FinancialInformation/InvestorDocumentsandFilings.aspx.

⁴⁹ Based on cost estimates prepared in 2004. See Dagmar Etkin, *Modeling Oil Spill Response and Damages Costs*, Proceedings of the 5th Biennial Freshwater Spills Symposium, 2004, at <http://www.environmental-research.com>.

⁵⁰ Bryden, K. J., Grace Catalysts Technologies, Columbia, Maryland; Habib Jr., E. T., Grace Catalysts Technologies, Columbia, Maryland; Topete, O. A., Grace Catalysts Technologies, Houston, Texas, Processing shale oils in FCC: Challenges and opportunities 09.01.2013 <http://www.hydrocarbonprocessing.com/Article/3250397/Processing-shale-oils-in-FCC-Challenges-and-opportunities.html>.

⁵¹ Pipeline and Hazardous Materials Safety Administration, Safety Alert—January 2, 2014, Preliminary Guidance from OPERATION CLASSIFICATION. This advisory is a follow-up to the PHMSA and Federal Railroad Administration (FRA) joint safety advisory published November 20, 2013 [78 FR 69745].

⁵² FRA Administrator Szabo, Opening Remarks to RSAC Meeting, October 31, 2013; <http://www.fra.dot.gov/eLib/Details/L04852>.

⁵³ FRA and PHMSA are agencies within DOT, which has the emergency authority to restrict or prohibit transportation that poses a hazard of death, personal injury, or significant harm to the environment. See 49 U.S.C. §20104.

⁵⁴ The NTSB held a forum on the safety of crude oil and ethanol transport by rail April 22 and 23, 2014; (continued...)

Guidance on Traffic Control Devices at Highway-Rail Grade Crossings is intended to aid practitioners responsible for planning, design or re-design of roadways with grade crossings, who have a general understanding of highway operational concepts and traffic engineering principles, but who may lack specific, in-depth knowledge of highway-rail grade crossings. This report does not define policies or standards, but educates practitioners on the array of tools available, how to determine when each would be appropriate, and where to find more information including the pertaining policies and standards. This guide supplements federal requirements, serving as a reference to aid in decisions about traffic control at grade crossings.

This FHWA report was produced by a technical working group composed of specialists in grade crossing safety, and led by representatives of FHWA, FRA, the Federal Transit Administration (FTA) and the National Highway Traffic Safety Administration (NHTSA). The document reviews existing laws, rules, regulations and policies and explains the underlying principles of grade crossing safety, including driver sight-distance and decision making, and highway and rail system operational requirements and objectives. The report defines passive and active control devices (as would be found in the MUTCD) and also defines and explains preemption/interconnection, pre-signals, train detection systems, experimental devices, and geometric design options and alternatives for maintaining the crossing which go beyond the MUTCD. Detailed instructions on how to evaluate a grade crossing with quantitative measures, and clear procedures on how to select appropriate components for a safe and effective traffic control system, make this document truly unique and valuable.

Always expect a train

A roadway-railroad grade crossing differs from a roadway-roadway intersection in that the train *always* has the right of way: motor vehicles approaching a grade crossing should always be prepared to stop if necessary. Drivers may not always understand or obey this. The public roadway agency has the responsibility of ensuring that the public -- motorist, bicyclist and pedestrian -- has sufficient information, and has it far enough in advance, to make a safe decision whether to cross or wait.

Information for this article came from the Federal Railroad Administration (FRA), the Federal Highway Administration (FHWA), the National Transportation Safety Board (NTSB), the California Public Utilities Commission (CPUC), the Institute of Transportation Engineers, Operation Lifesaver and the Burlington Northern Santa Fe Railway.

now (five days)
20x one day
limit fine

OPPOSE

Hours
9am - 4pm
Traffic
All businesses
close off
police / fire
unmarked
2 employees
+
Businesses

Not covered for
lease
when in + out
to how

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From *Tech Transfer Newsletter*, Fall 2004» [printer-friendly](#)

Tracks, Trains and Automobiles: Safety at Railroad Grade Crossings

By Laura Melendy, University of California Berkeley and Mark Hood, Pennsylvania State University

There are over 250,000 public and private at-grade railroad crossings for vehicles and pedestrians in the United States. Nationally, there were 2,929 reported collisions at grade crossings in 2003, resulting in 329 fatalities and 1002 injuries. California has 12,561 at-grade crossings and accounts for a disproportionate number of the nation's grade crossing collisions, fatalities and injuries: 140 collisions, 26 fatalities and 62 injuries. California ranks *fifth* in the nation (following Texas, Illinois, Louisiana and Indiana) in the number of highway-rail grade crossing collisions, and third in the nation (following Texas and Illinois) in the numbers of fatalities and injuries.

To learn more about this topic, plan now to attend the Western Regional Safe Grade Crossing Training Conference, "The Crossing Zone: A Decade of Progress" to be held May 1-4, 2005 in Costa Mesa, California. This conference is sponsored by the Technology Transfer Program and the Federal Railroad Administration and co-sponsored by the National Association of County Engineers, Union Pacific, Burlington Northern Santa Fe, Metrolink and other railroads, government and industry.

Conference sessions will cover timely topics, including: trespassing, the new train horn rule, "intelligent" rail systems, homeland security, liability issues, development around existing tracks and crossings, community outreach, important updates on federal legislation and the state of the industry, crossing inventories, the 2003 MUTCD, temporary traffic control, grade separations, crossing closures, signals and preemption, and diagnostic reviews. The conference program will also include three pre-conference tutorials on crossing design, preemption and quiet

Operation Lifesaver, a national, non-profit education and awareness program dedicated to ending crashes, fatalities and injuries at highway-railroad crossings, provides these national statistics:

- ▶ 64% of all crashes occur in daylight hours
- ▶ 25% of all crashes occur when a vehicle runs into a train
- ▶ Most crashes occur with trains traveling under 30 mph

- › Most crashes occur within 25 miles of the driver's home zones. An exhibit area will feature vendor products and services.
- › Nearly 50% of all crashes occur at crossings equipped with automatic warning devices This conference is intended for state and local road and highway agencies and heavy- and light-rail owners and operators. Other stakeholders, including law enforcement, crossing equipment suppliers, consultants and the public, are encouraged to attend.
- › A 100 car freight train traveling at 55 mph may take over a mile to stop once the emergency brakes are applied Information on the event will be posted at www.techtransfer.berkeley.edu as it becomes available or call Helen Bassham at 510-231-5676 for details.
- › A typical locomotive pulling 100 railcars can weigh approximately 6,000 tons, making the weight ratio of a train to an automobile proportional to that of an automobile to a soda can
- › Death is 40 times more likely in a crash involving a train, than in a crash involving another motor vehicle

Reducing crashes at roadway-railroad crossings is a traffic safety objective shared by the Federal Highway Administration (FHWA), the Federal Railroad Administration (FRA), the National Transportation Safety Board (NTSB), the California Public Utilities Commission (CPUC), the California Department of Transportation (Caltrans), railroads, counties, cities, law enforcement and the public.

To focus attention on grade crossing safety priorities, the US Secretary of Transportation released an Action Plan for Highway-Rail Crossing Safety and Trespass Prevention in 2004, with the objectives of elevating the importance of highway-rail crossing safety and adopting a uniform strategy to deal with this critical issue. This new Action Plan stresses nine initiatives: to establish responsibility for safety at private crossings; to advance engineering standards and new technology; to expand educational outreach; to energize enforcement; to close unneeded crossings; to improve data, analysis, and research; to complete deployment of emergency notification systems; to issue safety standards; and to elevate current safety efforts for effectiveness.

Also in 2004, the NTSB added "Improve School Bus Grade Crossing Safety" to its list of *Most Wanted Transportation Safety Improvements* by the States. Currently, California complies with only two of NTSB's five safety recommendations: California uses information about whether school buses routinely cross passive grade crossings as a factor in selecting crossings to upgrade with active warning devices, and California school bus driver training includes driver performance at grade crossings. The three safety recommendations not met by California are: installation of stop signs at passive grade crossings traversed by school buses; presence of "noise-reducing switches" (to reduce radio noise when a driver needs to "stop, look and listen") in all newly purchased school buses; and inclusion of questions on passive grade crossing safety in the commercial driver's license manual and examination. (Passive and active controls will be discussed in more detail under the heading "Traffic control devices.")

The new train horn rule may give some local agencies and communities even more reason to consider enhancing safety at grade crossings. Issued by FRA and effective December 18, 2004, the *Interim Final Rule for the Use of Locomotive Horns at Highway-Rail Crossings* requires that locomotive horns be sounded 15 to 20 seconds prior to arrival at a grade crossing as a warning to highway users. Exceptions will be made to this rule for areas deemed "Quiet Zones," which are areas where train horns will not regularly be used on the approach to grade crossings, if the crossings have sufficient safety improvements to compensate for the lack of warning from the train horn sounding. The new train horn rule provides an unprecedented opportunity for communities to reduce train horn noise by enhancing safety at grade crossings through the use of other safety devices.

Untangling jurisdictions

Typically, private railroad companies own the railroad tracks and the property (right-of-way) to either side of the tracks. At the grade crossing, the railroad is responsible only for devices within its right-of-way: the railroad installs and maintains the tracks, installs and maintains the roadway surface between and around the rails, and maintains any grade crossing signals *within its right-of-way*. However, the selection of the location and type of grade crossing signals to be installed cannot be determined by the railroad alone, because crossing signals are defined by FHWA as traffic control devices to regulate, guide or warn traffic. The public agency that owns the crossing roadway works alone or in conjunction with the railroad company to conduct an engineering study, and then to create and submit a traffic control proposal for review and approval by the California Public Utilities Commission (more on the CPUC later). Upon approval from the CPUC, the crossing signals can then be installed. Once the crossing signals are installed, the railroad will maintain the signals from that time forward.

Typically, the public entity is responsible for maintaining all approaches to the crossing, including the pavement, advanced warning signs, pavement markings, and the traffic detours which may be needed during maintenance work on the grade crossing. The public entity road owner and the railroad company usually make an agreement, often in writing, defining the responsibilities of each agency at each grade crossing location.

The California Public Utilities Commission (CPUC), however, holds the ultimate authority over cross-jurisdictional grade crossings in California. The CPUC is the state regulatory agency with statutory authority over the fifty railroads and rail transit systems in California, encompassing more than 11,000 public grade crossings located throughout 52 counties and 400 cities across California. Before any new highway-rail grade crossing traffic control system can be installed or before modifications can be made to an existing system, approval must be obtained from the CPUC. The Highway-Rail Crossing Safety Branch of the CPUC reviews proposals for crossings; authorizes construction of new at-grade crossings, underpasses and overheads; investigates deficiencies of warning devices or other safety features at existing at-grade crossings; and recommends engineering improvements to prevent accidents. These activities include developing and enforcing uniform safety standards, analyzing data for crossing closures, reviewing environmental impact assessments, apportioning costs for maintenance of grade crossing warning devices, and analyzing rail accident data for the CPUC's Annual Rail Accident Report.

The Federal Highway Administration is also involved in grade crossing safety issues, setting standards and providing guidelines for the assessment of safety at a grade crossing and for correct grade crossing design. These FHWA standards and guidelines include the appropriate use and placement of traffic control devices at and on the approaches to a grade crossing, and the effective integration of grade crossing signals with the other signs, signals and markings on the approaching roadways to ensure the safety of motorists, bicyclists and pedestrians.

FHWA also administers the distribution of Section 130 funds, which are funds authorized in Title 23 United States Code Section 130 and again in the Transportation Equity Act for the 21st Century (TEA-21). Section 130 funds are specifically designated for eliminating hazards at public highway-railroad grade crossings. The CPUC selects and prioritizes the public crossings which need improvements, determines the type of improvements to be made, and then applies for Section 130 funds on behalf of the State. In fiscal year 2003, California captured \$10.2 million of the \$155 million allocated to the States for installing protective devices and eliminating hazards at railroad-highway crossings.

Standards on traffic controls

The national minimum standards and guidance information for traffic control at and approaching highway-rail grade crossings are established in Part 8 of the FHWA *Manual on Uniform Traffic Control Devices* (MUTCD); the MUTCD 2003 California Supplement amends designated portions of the MUTCD for use in California. Together, the MUTCD and the California Supplement establish State standards for all signs, signals, markings and other warning devices at or approaching highway-rail grade crossings. Collectively, the combination of devices selected or installed at a specific highway-rail grade crossing is referred to as a "traffic control system."

The MUTCD states: "The traffic control devices, systems, and practices described herein shall be used at all highway-rail grade crossings open to public travel, consistent with Federal, State, and local laws and regulations." It further states: "The function of this traffic control is to permit safe and efficient operation of both rail and highway traffic at highway-rail grade crossings. For purposes of installation, operation, and maintenance of traffic control devices at highway-rail grade crossings, it is recognized that the crossing of the highway and rail tracks is situated on a right-of-way available for the joint use of both highway traffic and railroad traffic. The highway agency or authority with jurisdiction and the regulatory agency with statutory authority [*in California, the CPUC*]... jointly determine the need and selection of devices at a highway-rail grade crossing."

Traffic control devices

Generally, traffic control devices for at-grade railroad-roadway crossings may be categorized as either active controls or passive controls.

Passive controls include those traffic signs and pavement markings which identify and direct attention to the location of a highway-rail grade crossing. For example, the crossbuck sign indicates the location of a railroad crossing to motorists, bicyclists and pedestrians, but does not indicate that a train is approaching. A stop sign is a passive control that can be used to encourage motorists to "stop, look and listen" - or at least, to stop.

Passive devices are often the only grade crossing traffic control devices used on rural and other low-volume roads, public and private. Based on data from the 2004 national crossing inventory, forty-four percent or 109,174 of all 245,729 grade crossings in the US used only passive controls; over eighty percent of these or 86,000 of 109,174, were public grade crossings. Passive public crossings account for about thirty-five percent of all grade crossings, but for as much as forty-two percent of all grade crossing fatalities .

Active control systems inform motorists, bicyclists and pedestrians of the approach or presence of a train. Flashing light signals, bells, and crossing gates are examples of active controls. These both indicate the existence of a railroad crossing, and also, when activated, provide warning of an approaching train. Active devices are rarely used alone; they are most often combined with passive devices, such as pavement markings and advance warning signs.

Active controls are widely used on arterials, near schools and commercial areas, at crossing with multiple tracks, at high accident locations, and in urban and other locations where nearby intersections or traffic conditions might cause traffic to queue on or across the tracks. The FRA requires active control at grade crossings where train speeds exceed 79 miles per hour.

While not always obeyed, automatic gate arms present a semi-barrier, discouraging vehicular and pedestrian traffic from crossing when a train is approaching. If crossing gate violations cannot otherwise be deterred, physical barriers in the form of medians, concrete barrier walls, or more substantial gates such as four-quadrant gates or vehicle arresting barriers, can be used to restrict driver access to opposing lanes. Eliminating the at-grade crossing is also an option.

Eliminating at-grade crossings

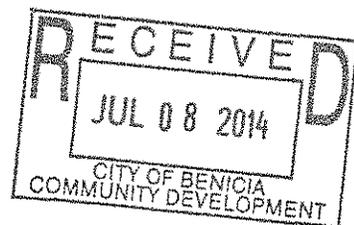
Although grade separation structures are costly, grade separation is the safest traffic control alternative, because it eliminates all potential points of conflict between trains and the public, while still allowing traffic to cross the railroad tracks. FHWA requires grade separation at crossings of controlled access highways, and the FRA requires grade separation or closure at crossings where train speeds exceed 125 miles per hour. Grade separation should also be considered in areas with high vehicle traffic volumes and/or high train (particularly passenger train) traffic volumes - that is, at locations where at-grade crossing would cause excessive delay to vehicle traffic or excessive risk to both motor vehicle and train passengers.

A final alternative is full closure of the crossing. If acceptable, cost-effective, alternative access is available, and if other passive or active treatments are ineffective or not feasible, then crossing closure may best balance public need, convenience and safety.

New guidance, more detail

While the MUTCD and California Supplement spell out standards and guidance on how to *use* specific passive and active controls correctly, the documents lack detailed guidance on how to *select* the most appropriate type of traffic controls - which depends upon the unique situation of a particular intersection. FHWA's newly released *Guidance on Traffic Control Devices at Highway-Rail Grade Crossings* fills that gap.

From: monique <moniqueboyer@yahoo.com>
To: "info@beniciaCBR.com" <info@beniciaCBR.com>, Amy Million <amillion@ci.benicia.ca.us>, Brad Kilger <bkilger@ci.benicia.ca.us>
CC: Peter O'Farrell <pofarrell323@gmail.com>
Date: 7/7/2014 8:23 PM
Subject: Comments in Support of Valero Expansion



Hello City of Benicia Staff,

I would like to express my support for the Valero crude by rail expansion project. Valero provides hundreds of jobs and monetary support to our community. They do so because they are able to maintain a profitable business in our community. By approving the project, Valero will be able to move product more efficiently. I believe that rail is a much safer means to move oil than by truck. Valero will continue to need to move crude oil whether or not we allow the rail project to go through. Wouldn't we rather the oil take safe passage on rail lines than on trucks which cause greater pollution and congestion on our roads? If we do not allow Valero to move forward with the project, Valero could choose to utilize another plant to process the oil. Instead of growing industry in Benicia, we could lose jobs and tax dollars to another community that allows Valero to move their product more efficiently. We must allow Valero to continue to operate in an efficient and progressive way. Valero is a key job provider and provides millions of dollars to our community. We can not afford to make it difficult for industry to do business in our town.

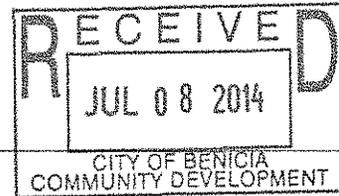
Please feel free to share my comments as needed.

Best regards,
Monique Boyer, MBA, SPHR
Regional Human Resources Manager
Lee Enterprises
Benicia Citizen and Home Owner

Sent from my iPad

Amy Million

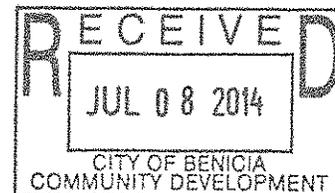
From: Sam & Mary Hammonds <s.m.hammonds@att.net>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>
Date: 7/7/2014 8:57 PM



I am not able to attend the Planning Commission Mtg on July 10, but I want to express my support for approval of the Valero Crude By Rail project. It is good locally and good for the state and good for the nation. Valero has adequately addressed the safety issues and the slight risk involved is far over-shadowed by the advantages for this project. Please approve it now!

Sam and Mary Hammonds
902 Bradford Way
Benicia, CA

From: Peter <pofarrell323@gmail.com>
To: monique <moniqueboyer@yahoo.com>
CC: "info@beniciaCBR.com" <info@beniciaCBR.com>, Amy Million <amillion@ci.benicia.ca.us>, Brad Kilger <bkilger@ci.benicia.ca.us>
Date: 7/7/2014 9:01 PM
Subject: Re: Comments in Support of Valero Expansion



What great words , I agree.

Sent from my iPhone

> On Jul 7, 2014, at 8:23 PM, monique <moniqueboyer@yahoo.com> wrote:

>

> Hello City of Benicia Staff,

>

> I would like to express my support for the Valero crude by rail expansion project. Valero provides hundreds of jobs and monetary support to our community. They do so because they are able to maintain a profitable business in our community. By approving the project, Valero will be able to move product more efficiently. I believe that rail is a much safer means to move oil than by truck. Valero will continue to need to move crude oil whether or not we allow the rail project to go through. Wouldn't we rather the oil take safe passage on rail lines than on trucks which cause greater pollution and congestion on our roads? If we do not allow Valero to move forward with the project, Valero could choose to utilize another plant to process the oil. Instead of growing industry in Benicia, we could lose jobs and tax dollars to another community that allows Valero to move their product more efficiently. We must allow Valero to continue to operate in an efficient and progressive way. Valero is a key job provider and provides millions of dollars to our community. We can not afford to make it difficult for industry to do business in our town.

>

> Please feel free to share my comments as needed.

>

> Best regards,

> Monique Boyer, MBA, SPHR

> Regional Human Resources Manager

> Lee Enterprises

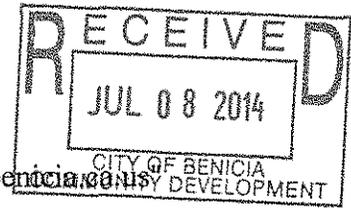
> Benicia Citizen and Home Owner

>

> Sent from my iPad

Amy Million - Valero CBR Project

From: "Aguilera, Alfonso" <Alfonso.Aguilera@valero.com>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>
Date: 7/8/2014 7:32 AM
Subject: Valero CBR Project
CC: "info@beniciaCBR.com" <info@beniciaCBR.com>, "bkilger@ci.benicia.ca.us" <bkilger@ci.benicia.ca.us>



To whom it may concern:

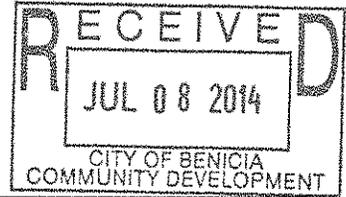
I've been an employee of the Benicia Refinery for about 22 years and have previous experience working for Chevron and Esso Refineries as well, and I can tell you, honestly, that the Valero safety culture is as good (if not better) as the one practiced by bigger corporations. The Benicia Crude by Rail Project, if approved, will be performed with the same level of safety and professionalism this Refinery has Benicia residents accustomed to.

This project will provide the City of Benicia with lots of benefits, including the creation of new jobs resulting on more revenue. As an employee and resident of this beautiful City I fully support the CBR Project and hope this dream will materialize soon to benefit everyone.

Thanks a lot.
Al Aguilera
Valero Refinery Employee.

Amy Million

From: "Frank, David" <David.Frank@Valero.com>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>
Date: 7/8/2014 8:36 AM
CC: "info@beniciaCBR.com" <info@beniciaCBR.com>



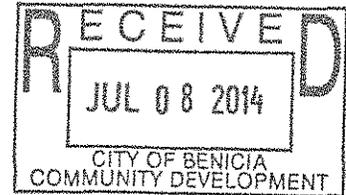
I support Valero's Crude By Rail project...

Thanks,
Dave Frank

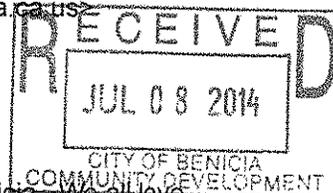
From: Don Stock <purduedon80@yahoo.com>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>, "bkilger@ci.benicia.ca.us" <bkilger@ci.benicia.ca.us>
CC: <info@beniciaCBR.com>
Date: 7/8/2014 9:20 AM
Subject: Valero Crude by Rail

As a Benicia resident for 25 years and raising my family here I believe it is important that the city support this project. The EIR supports the project from an environmental and safety stand point. Valero is one of the safest places to work and there is no reason to think this project would be any different. I believe over 75 % of Benicians support Valero and this project. Valero is a good neighbor.

Sent from my iPad



From: Linda Yarbrough <eyarbrough@att.net>
To: Brad Kilger <bkilger@ci.benicia.ca.us>, A Million <amillion@ci.benicia.ca.us>
Date: 7/8/2014 9:31 AM
Subject: Support the Valero Crude By Rail Project



To: Benicia City Planning Commissioners

I have lived in Benicia for 42 years. I have 2 sons and 4 grand-children that live in Benicia. We all love and enjoy our town.

I have attended the Valero public information meetings for the CBR Project. I have also studied the Environmental Impact Report.

I will be out of town on July 10th. However, I would like to express my strong support for the Valero Crude By Rail Project.

This Project is very important for the future of Benicia and Valero. Valero and the City have passed all the requirements for the Planning Commission to permit the Project.

Valero is a safety, environmental and operations leader in the petroleum business, with an excellent record in Benicia and at it's other locations. We are fortunate to have Valero operating the largest business in the City and County. Valero provides many of the best jobs in the area, supports many local businesses, is the largest tax payer and gives freely to support many community needs. The Valero Benicia Refinery produces a large percentage of the fuels vital to the local economy and California. This Project is essential for America to utilize domestic energy sources and reduce our dependence on foreign energy.

The City of Benicia and the residents should do all that is reasonable to support Valero and to insure the refinery remains competitive by approving the Project.

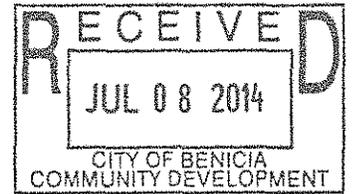
I request your support and vote to approve the Valero CBR Project.

Sincerely,

Ed Yarbrough
375 Saint Augustine Court
Benicia, Ca.

Sent from my iPad

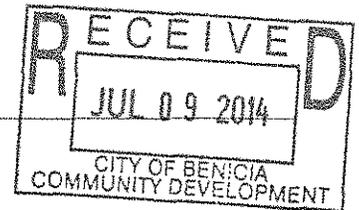
From: <carrol1of5@aol.com>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>
Date: 7/7/2014 6:15 PM
Subject: Valero CBR Project



I live in Benicia and have so for nearly 27 years. I support the CBR. Project, as it is important that oil refineries can continue to do business in California in order to provide jobs and a stable tax basis for our city programs.
Maureen Carroll

Amy Million - Valero CBR Project

From: "Ella Marie Kallios" <kallios_e@robertscompanies.net>
To: <amillion@ci.benicia.ca.us>
Date: 7/8/2014 12:20 PM
Subject: Valero CBR Project



Hello Ms. Million,

Unfortunately I will not be able to attend the Planning Commission Meeting on Thursday evening. Please accept this email as my testimony in support of the Valero CBR project. I am a Benicia resident and I feel very strongly that this project needs to be approved. Valero is a good neighbor, a great employer, and a significant contributor to the city budget.

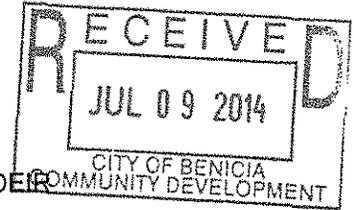
I received a call recently from a polling company asking my thoughts about a 1 cent sales tax increase to assist Benicia with its budget shortfall. I was perplexed as to how our city can ask us as residents to pay more in taxes when we could potentially be turning our back on a company that pays 25% of the taxes in our city.

In addition to my fiscal concern I am also concerned that the "potential" dangers of crude by rail have been exaggerated. We all need gasoline and I would prefer to see the products needed to produce this product come to our location by rail rather than by ship or tanker truck.

I served on the Vacaville Planning Commission for three terms and I absolutely appreciate the work and the energy that the Planning Department puts into these types of proposals. Thank you for taking the time to read my thoughts.

Kind regards,
Ella Marie

From: Michael Karsh <michael_karsh@earthlink.net>
To: <bkilger@ci.benicia.ca.us>, <amillion@ci.benicia.ca.us>
Date: 7/8/2014 1:33 PM
Subject: Comments and questions concerning Valero Crude By Rail Project DEIR



Brad Kilger and Amy Million

The model given to derive the probability of derailments of tank car trains that result in releases of crude oil of greater than 100 gallons is given in Appendix F of the report as:

$$P(\text{release of more than 100 gallons}) = \sum_{j=1}^n P_j(\text{derailment per train-mile}) * \#trains_j * \#miles_j * P_j(\text{release of more than 100 gallons given derailment})$$

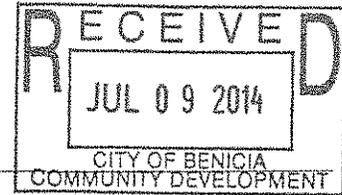
It would be helpful if there were a link to the data behind the model given in the DEIR for the probability of oil release of more than 100 gallons or some other way of getting access to this data. Without being able to see the data it is more difficult to assess the correctness of the model. The model implies that the number of trains is independent of the number of miles of track. This seems counter-intuitive. It seems that the number of miles of track and the number of trains should be proportional, not independent. Assuming this, the model of assuming that there is a certain derailment probability per train-mile that you multiply by the number of trains by the number of miles would only be correct if the number of derailments is proportional to the square of the number of miles or the square of the number of trains. I need to see the data to see if this is the case.

In addition, the report states that the number of derailments resulting in releases counts only releases of greater than 100 gallons. I question whether this is the valid number to use. I should think a more valid number would be the number of derailments that result in any release of fluids at all, in contrast to the number of derailments that do not result in any release of fluids. It would be desirable to know how much including derailments that result in releases of less than 100 gallons would change the derived probability of derailments that result in the release of fluids. I would also like to know the probability of having a leaky tanker that releases fluid even without derailment.

Michael Karsh, Ph.D. (Statistics)

Amy Million - Valero's Crude by Rail project :

From: David Jenkins <norcaltruck@sbcglobal.net>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>
Date: 7/8/2014 2:24 PM
Subject: Valero's Crude by Rail project :
CC: "bkilger@ci.benicia.ca.us" <bkilger@ci.benicia.ca.us>



NOR CAL TRUCK SALES
 200 Industrial way
 Benicia , CA 94510

Valero's Crude by Rail Project :

07/07/2014

Dear Amy and Brad :

I am a local business man in the Benicia Industrial Park with property ownership in the park . I am seriously opposed to this project for a multitude of reasons , breathing air quality , hazardous waste control , environmental destruction should one of these cars rupture or derail ,traffic congestion at or near the freeway off ramp and certainly not least for me the movement and storage of the flammable , combustibile ,stinky transport tankers that will be used to transport the crude along sidings that I work next to all day every day here in Benicia . NTSB and the DOT recommendations of caution about the use of these tankers in and around populated areas should not be discounted.

Valero, paints a picture of community involvement, increase in tax revenue and new job formation . Maybe that is true, however could any of that be worth the sacrifice of life, air quality, traffic or an environmental catastrophe? If you look at the records about train derailment across our country in the last year a reasonable person might ask why we allow rail traffic at all. The railroad derailments have devastated cities, small communities and taken human life. Can we allow such a possible thing to happen here in our very special community?

I have tried to read the entire EIR report with its many nuances about the destruction and air quality depletion that will be forthcoming if this project is allowed. I am a reasonable man with many years of business experience and life behind me; I fully understand the dangers of treading on others life for the sake of money. It is my considered opinion that it never pays and that the fall out of bad judgment rests with you or in this case the community for many years to come.

There have been many people from here in Benicia including myself who are opposed to this project , surely as the officials of our community ,granted the right to protect us from such travesties that you will unconditionally deny the transport and increase of potential risk ask for from Valero with this rail project .

I have watched and listened to the public relations propaganda that the railroad and Valero have tried to communicate, the truth is they really don't care about the citizens , they care about their

stockholders ! I am not putting any of the individuals that work there at fault, it's just the nature of big business, power ,money and greed are the roots .

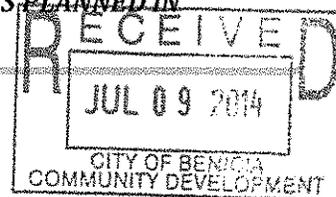
Benicia City Council has the ability and the right and the duty to protect its community, please stand up and deny this project from advancing any further!

Sincerely

David Jenkins

Local business owner and citizen of Benicia .

Amy Million - SACRAMENTO BEE - BREAKING NEWS: CRUDE OIL TRAIN PROTESTS PLANNED IN SACRAMENTO AND DAVIS



From: <rogrmail@gmail.com>
To: "Amy Million" <amillion@ci.benicia.ca.us>
Date: 7/8/2014 3:33 PM
Subject: SACRAMENTO BEE - BREAKING NEWS: CRUDE OIL TRAIN PROTESTS PLANNED IN SACRAMENTO AND DAVIS

Amy – Please add this to the public record on Valero Crude by Rail, and distribute to Planning Commission and Council. Our friends and neighbors uprail of Benicia are aware of potential conflagrations if we approve Valero CBR. They are getting out on the tracks and letting others know about our friendly giant's ill-advised proposal.

Roger Straw
 Benicia Independent
www.BeniciaIndependent.com

CRUDE BY RAIL, DAVIS CA, LOCAL REGULATION, SACRAMENTO CA, STATE REGULATION, TAKE ACTION, VALERO CRUDE BY RAIL

CRUDE OIL TRAIN PROTESTS PLANNED IN SACRAMENTO AND DAVIS

JULY 8, 2014 ROGER STRAW [HTTP://BENICIAINDEPENDENT.COM/WP/CRUDE-OIL-TRAIN-PROTESTS-PLANNED-IN-SACRAMENTO-AND-DAVIS/](http://beniciaindependent.com/wp/crude-oil-train-protests-planned-in-sacramento-and-davis/)

Repost from [The Sacramento Bee](#)

Crude oil train protests planned in Sacramento, Davis

By Tony Bizjak, Jul. 8, 2014

Laurie Litman, who lives a block from the rail tracks in midtown Sacramento, says oil and rail companies are about to put her neighborhood and plenty of others in danger, and she wants to stop it.

Litman is among a group of environmental activists in Sacramento and Davis who will gather this week at the Federal Railroad Administration office in Sacramento and at the Davis train station to protest plans by oil companies to run hundreds of rail cars carrying crude through local downtowns every day. The protests, on the anniversary of an oil train crash and explosion that killed 47 people in the Canadian city of Lac-Megantic, will spotlight a plan by Valero Refining Co. of Benicia to launch twice-daily crude oil train shipments through downtown Roseville, Sacramento and Davis early next year.

"Our goal is to stop the oil trains," said Litman of 350 Sacramento, a new local environmental group. "We are talking about 900-foot fireballs. There is nothing a first responder (fire agency) can do with a 900-foot fireball."

Sacramento Assemblyman Roger Dickinson, an advocate for increased crude oil rail safety, will speak at noon Wednesday during the Sacramento event at 8th and I streets. The Yolano Climate Action group will distribute leaflets at the Davis train station Tuesday and Wednesday evening about the Valero proposal. The Davis City Council recently passed a resolution saying it opposes running the trains on

the existing downtown Davis rail line.

The protests are among the first in the Sacramento area in response to a recent surge in crude oil rail transports nationally, prompted mainly by new oil drilling of cheaper oils in North Dakota, Montana and Canada. In California, where rail shipments have begun to replace marine deliveries from Alaskan oil fields and overseas sources, state safety leaders recently issued a report saying California is not yet prepared to deal with the risks from increased rail shipments of crude.

Oil and railroad industry officials point out that 99.9 percent of crude oil shipments nationally arrive at their destinations without incident, and that the industry is reducing train speeds through cities, helping train local fire and hazardous material spill crews, and working with the federal government on plans for a new generation of safer rail tanker cars. Valero officials as well say their crude oil trains can move safely through Sacramento, and a recent report sponsored by the city of Benicia concluded that an oil spill along the rail line to Benicia is highly unlikely.

In a letter last week, however, four Northern California members of Congress called on the federal government to require oil and rail companies take more steps to make rail crude shipments safer. The letter was signed by Doris Matsui, D-Sacramento, George Miller, D-Martinez, Mike Thompson, D-St. Helena, and John Garamendi, D-Walnut Grove.

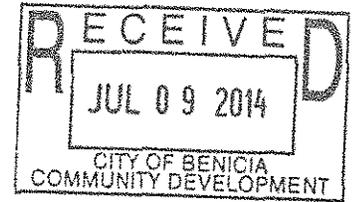
“We are especially concerned with the high risks involved with transporting .. more flammable crude in densely populated areas,” the group wrote to U.S. Department of Transportation Secretary Anthony Foxx. “Should spills or explosions occur, as we have seen over the last year, the consequences could be disastrous.”

The four lawmakers said oil companies should be required to remove more volatile gases from Bakken crude oil before it is shipped nationally from North Dakota. The federal government issued a warning earlier this year about Bakken crude after several Bakken trains exploded during derailments. The California Congress members also encouraged federal representatives to move quickly to require railroads to install advanced train control and braking systems. Industry officials have said those systems, called Positive Train Control, are expensive and will take extended time to put into place.

Representatives from a handful of Sacramento area cities and counties are scheduled to meet this week to review Valero’s crude oil train plans, and to issue a formal response to the environmental document published two weeks ago by Benicia that concluded derailments and spills are highly unlikely. City of Davis official Mike Webb said one spill and explosion could be catastrophic, and that as more oil companies follow Valero’s lead by bringing crude oil trains of their own through Sacramento, the chances of crashes increase.

The Sacramento group has indicated it wants a detailed advanced notification system about what shipments are coming to town. Those notifications will help fire agencies who must respond if a leak or fire occurs. Local officials say they also will ask Union Pacific to keep crude-oil tank cars moving through town without stopping and parking them here. The region’s leaders also want financial support to train firefighters and other emergency responders on how to deal with crude oil spills, and possibly funds to buy more advanced firefighting equipment. Sacramento leaders say they will press the railroad to employ the best inspection protocols on the rail line.

July 9, 2014



To: Amy Million, Principal Planner
Community Development Department
250 East L Street
Benicia, CA. 94510

"Please add my/our comments to the public legal record on Valero's Crude by Rail Project and incorporate them as part of the DEIR review"

As I expected, there is a frenzied rush by the oil corporations, petroleum refiners, transportation (rail) providers, sub-contractors, etc. to move the crude as quickly as they can and profit in any way possible before the resistance prevails. I recommend that Benicia Planners, Benicia Mayor / City Council and citizens embrace the easiest solution; stop or delay indefinitely the permit /DEIR process for the Valero crude by rail project! There simply is not an infrastructure in place to address the potential disaster moving Bakken crude/tar sands by rail.

My family and I have lived in Benicia since 1988 and have never felt exposed to any immediate health or safety threats until this project was announced. Based on the US Department of Transportation Guidebook, Benicia crude oil train derailment risk zones are clearly identified, including the number of Benicia residents at risk. This area is commonly identified less subtly as The Blast Zone! If this project is as straight forward and safe as Valero says it is, (Valero Myths and Facts Sheet Handout), then why is the whole country (citizens) and dozens of local, state, and recently, federal agencies weighing in daily to strengthen existing regulations and safety guidelines, even creating new legislation to protect people and property.

Benicia must be given enough time to thoroughly evaluate All of the environmental and public health risks, not just air quality, for any crude oil rail terminal land use permits and reject any that are proposed within one mile of our homes and schools.

The explosive wake-up call has been heard... I definitely do not want to feel it!

Regards,

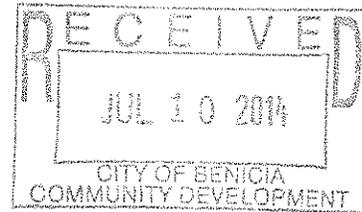
Kenneth Bocox

Catherine Bocox

515 Winston Ct. Benicia, CA 94510

July 9, 2014

To: Amy Million, Principal Planner
Community Development Department
250 East L Street
Benicia, CA. 94510



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The explosive wake-up call has been heard... I definitely do not want to feel it!

Regards,

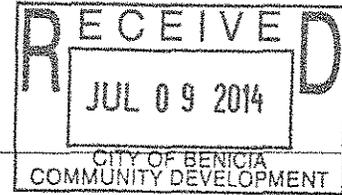

Kenneth Bocox

Catherine Bocox


515 Winston Ct. Benicia, CA 94510

Amy Million - Support for Valero's Crude By Rail Infrastructure Project

From: "Lord, Jeffery" <Jeffery.Lord@valero.com>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>, "bkilger@ci.benicia.ca.us" <bkilger@ci.benicia.ca.us>
Date: 7/9/2014 1:56 PM
Subject: Support for Valero's Crude By Rail Infrastructure Project
CC: "info@beniciaCBR.com" <info@beniciaCBR.com>



Amy Million and Brad Kilger,

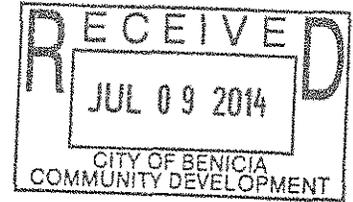
My wife, Maria, and I attended Valero's informational meeting regarding the DEIR on Monday, June 30th with our baby, Nathan.

We were both so impressed with the tremendous amount of work that has been performed to determine if this project is a good idea for the environment and the region. We were also impressed to hear that the project decreases emissions on a global and local level. We also love that the project reduces the risk of having an environmental release, since there is a higher probability that a ship will leak crude oil than a railway car. We are both strong believers in this project and believe it should be implemented without delay.

Thank you,
The Lord Family

Jeffery Lord
Valero Benicia Refinery
Associate Mechanical Engineer
Mech. Reliability - Complex 1
Office: 707-745-7980

From: Gail Stock <dgbstock@yahoo.com>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>
Date: 7/9/2014 2:23 PM
Subject: Crude by Rail



I am writing to you in support of the crude by rail project. I am a Benicia resident and have been for over 28 years now. During that time I have been impressed with Valero as a good neighbor. I believe that the city of Benicia has done an excellent job in acquiring environmental reports to ensure the safety and air quality of all Benicia residents. I was impressed with the fact that you covered ALL possible impacts to Benicia and thoroughly convinced me with your reports that crude by rail is the way to go in the future for our best interest.

1. The air quality improvement of rail transportation versus freight (by ship) was amazing.
2. The fact that our rail cars would be maned versus the accident that you discussed with rail cars that were completely without drivers was reassuring to me. Also the fact that a tax will be levied on the crude by rail to cover the increased cost to California for improving our tracks and constant inspections to ensure our safety.
3. The training provided by Valero to our firefighters in Benicia was also very reassuring. They convinced me that they are more than capable to take care of any emergencies.
4. Having the crude delivered to a location on the outskirts of our city is favorable to me.

Thank you for you continued efforts to ensure the safety of all Benicia residents.

Sincerely,

Gail Stock

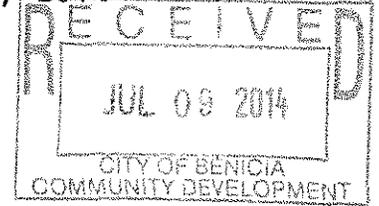
Sent from my iPhone

Andrew F. Siri
716 West H Street
Benicia, CA 94510

HANDCARRIED

July 10, 2014

To: Benicia Planning Commission
Re: Valero Crude Oil by Rail Project



Planning Commission Members:

I am quite concerned about Valero's request to deliver crude oil by rail.

I own property at 510 and 512 East Channel Road which I developed 29 years ago where I have two tenants.

East Channel Road dead-ends at Bayshore Road immediately after crossing over Union Pacific Railroad tracks and is a heavily used roadway. This would inconvenient a number of property owners, delivery trucks and workers.

To my knowledge, the delivery by ship which Valero already has inconveniences no one.

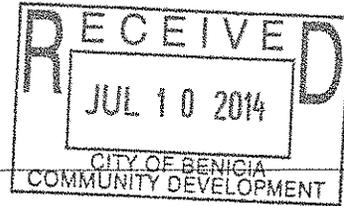
Sincerely,

A handwritten signature in black ink, appearing to read "Andrew F. Siri".

Andrew F. Siri

Amy Million - CBR

From: Jack Bethards <jack@schoenstein.com>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>
Date: 7/10/2014 7:37 AM
Subject: CBR



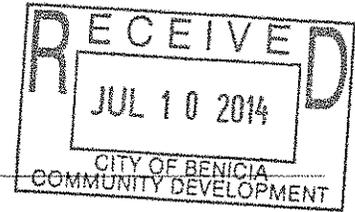
Dear Amy,

I am just writing to affirm my complete support of the Valero CBR program. There is some risk in everything we do. I am convinced that the risk here is very low in comparison to the very high reward to the tax payers of Benicia in keeping Valero competitive.

Jack M. Bethards
President and Tonal Director
Schoenstein & Co.
4001 Industrial Way
Benicia, CA 94510
(707) 747-5858
Fx (707) 747-4771
jack@schoenstein.com

Amy Million - Valero Crude By Rail Infrastructure project

From: "Lam, Tom" <Tom.Lam@valero.com>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>
Date: 7/10/2014 8:22 AM
Subject: Valero Crude By Rail Infrastructure project



Hello Amy,

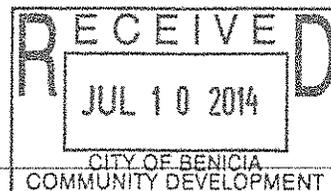
As an employee at the Benicia refinery for the last 25 years, I can attest to the strong safety culture we have here. We work very hard every day to maintain that safety culture and proud to be recognized as one of the safest refineries to work in the state. We are one of the two Valero refineries in the state to be certified and recently re-certified in the Cal-OSHA Voluntary Protection Program (VPP). Safe practices are what we do, every day. We are also proud to be a good corporate citizen and good supporter of local charitable organizations and local merchants. This infrastructure project is a win-win proposal for the city of Benicia and the local communities, and it will help Valero to continue to be a good corporate citizen, a good employer, and a solid contributor to our local economic development in a very competitive market place.

Thank you.

Kind regards,
Tom Lam
Project Manager/Sr. Staff Engineer
Valero Benicia Refinery

Amy Million - Valer's Crude-By-Rail Project

From: "L. BIRSE" <dbgreen2@yahoo.com>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>
Date: 7/10/2014 9:14 AM
Subject: Valer's Crude-By-Rail Project



Linda Birse
 2706 Adrian Drive
 Davis, CA 95618
 530-759-9547
 Dbgreen2@yahoo.com
 July 9, 2014

Brad Kilger
 City Manager
 250 East L Street, Benicia, CA 94510
 bkilger@ci.benicia.ca.us
 Fax: 707-747-1637

Amy Million
 Principal Planner
 Community Development Department
 250 East L Street, Benicia, CA 94510
 amillion@ci.benicia.ca.us
 Fax: 707-747-1637

Dear Mr. Kilger and Ms. Million:

Please add my comments to the public legal record on Valero's Crude By Rail Project and incorporate them as part of the review of its DEIR. In addition, please forward my comments to the Planning Commissioners.

I am a Davis resident, up-rail from the proposed Valero rail project, I am VERY concerned about the Valero rail project and the two 50-car trains will come across the Yolo Bypass, which includes our sensitive Yolo Basin Wildlife Preserve, goes through our downtown, including several residential areas and exits along the edge of UC Davis.

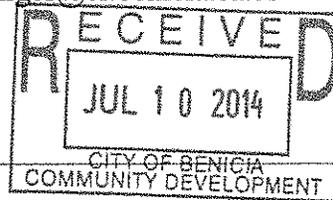
Based on the DEIR report, inadequacy is recognized of existing DOT-111 tank cars for safely transporting Bakken crude, and recommends that "[The California Public Utilities Commission (CPUC)] should request that the DOT move expeditiously to finalize new and retrofitted tank car regulations that will result in a more rapid phase out of DOT-111 tank cars." This recommendation lacks force and specificity. CPUC should demand that DOT-111s are either immediately banned for crude-by-rail service or removed from crude-by-rail and hazardous cargos service within 30 days. CPUC should also submit comments on the proposed tank car rule when it is released in the fall, using the Working Group's collective expertise to illustrate why stringent tank car standards are necessary for the safety of California communities if crude-by-rail is to continue in the state.

The DEIR report also notes that the February 2014 voluntary agreement by the railroads to lower speed limits for crude oil trails with more than 20 cars in "high-threat-urban-areas" leaves out many vulnerable California areas. In addition to petitioning the Federal Rail Administration (FRA) to consider additional restrictions and monitoring and enforcing the new speed limits in the existing voluntary agreement., CPUC should address this issue by enacting safer speed limits through vulnerable populated areas.
 Thank you for your consideration.

Sincerely,
 Linda Birse
 Retired Elementary School Teacher

Amy Million - Planning Commissioning Meeting

From: "Bowden, Billie" <Billie.Bowden@valero.com>
To: "amillion@ci.benicia.ca.us" <amillion@ci.benicia.ca.us>, "bkilger@ci.benicia.ca.us" <bkilger@ci.benicia.ca.us>
Date: 7/10/2014 10:12 AM
Subject: Planning Commissioning Meeting
CC: "info@beniciaCBR.com" <info@beniciaCBR.com>



I know people hate change and some just don't want to change, but they need to look at the benefits it will bring to the people and the City of Benicia. Jobs, generating millions in taxes, wages and economic benefits, reducing dependency on foreign oil. The list goes on and they way outweigh the risks people seem to think it will create. Valero is not willing to jeopardize the people, the city or the refinery itself by wanting to make these improvements and going forward with the Crude by Rail Project. Safety and the environment are only 2 of their main priorities in going forward with this.

People get scared and speak without knowing all the facts. I hope that this meeting and the DEIR will open their eyes and minds to a better future and way by allowing crude by rail to the Valero refinery.

Thank you

Billie Bowden
 Document Control

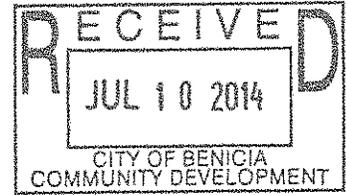
 **Eichleay**
 Valero Benicia Refinery
 3400 E. Second Street
 Benicia, CA.

Direct 707-745-7643
 Cell 510-685-7916

*****CONFIDENTIALITY NOTICE*****

The information in this email may be confidential and/or privileged. This email is intended to be reviewed and used only by the individual or organization named above for the explicit purpose of conducting business. If you are not the intended recipient or an authorized representative of the intended recipient, you are here-by notified that any review, dissemination or copying of this email and its attachments, if any, or the information contained herein, is prohibited. If you have received this email in error, please notify the sender immediately by return email and delete this email from your system.

From: Jennifer A Thornton <joyfuljennifer@hotmail.com>
To: <amillion@ci.benicia.ca.us>, <bkilger@ci.benicia.ca.us>
CC: <info@beniciaCBR.com>
Date: 7/10/2014 1:59 PM
Subject: Transport by Rail



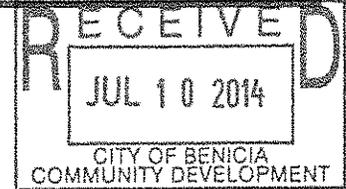
To whom it may concern:

I support the idea of Valero's shipments of crude oil into Benicia via railway rather than/in addition to marine transport. I understand that there are those who are concerned about de-railings. I'm sure Valero management is too. Nobody wants to buy crude oil twice or clean it up even once. I know that local business owners have voiced a request for the suppression of the train whistles that rattle the shelves inside their buildings, but I'm sure that's something that can be worked out.

Jennifer Thornton
Benicia Resident

Amy Million - Valero Draft Environmental Impact Report

From: Marc Lancet <Marc.Lancet@solano.edu>
To: "Amy.Million@ci.benicia.ca.us" <Amy.Million@ci.benicia.ca.us>
Date: 7/10/2014 2:58 PM
Subject: Valero Draft Environmental Impact Report
CC: Lisa Reinertson <lisa.reinertson@gmail.com>, "Pamela Peck" <pampeck123@comcast.net>, Annette De Bow <NETDE@aol.com>



Dear Benicia Planning Commission,

I have heard so much negative response to the **Valero Draft Environmental Impact Report** in the last week. So much more information has come my way from communities stretching from Davis to Benicia than I typically receive over any issue. So I thought I would suggest caution. I must admit that I have lost much faith in participatory democracy. Those serving the citizens of our country so often to decide against their interests in an effort to serve the interests of the wealthy that have a stake in a given issue. But I am hoping that you fine folks will restore my faith.

I would like to offer a few insights from my own knowledge on such topics:

- EIRs are paid for by and written for the corporations that are interested in a project. They always report positively on a project and are often misleading.
- Union Pacific railroad has a poor safety record on transport of toxic materials. The spill in Dunsmuir in 1991 was an exact repeat of an earlier accident at the same site, violating many of the same safety laws and regulations as the first spill. The EIR claims a clean safety record for Union Pacific. A simple internet search proves the dishonesty of this claim. I would expect them to make the claim, but I expect you to call it what it is and turn down this proposed overland shipment of toxic materials.
 - I live in Davis and work at Solano Community College. As an artist I have many dealings with Arts Benicia and other Benicia art organizations. This proposal unites us all in the specter of yet another large corporation willing to risk the quality of life and even our vary lives so that they might financially gain.
- I am personally in touch with many who suffered in Fukushima due to the Tsunami/nuclear disaster. This environmental catastrophe demonstrates that neither the corporations responsible or the government compensate those devastated in an environmental disaster. Only citizens are left to suffer the impacts of such irresponsible risk taking with their lives.

I respectfully encourage you to distance yourself from this issue. Spend your energies supporting and enhancing all that makes Benicia a unique jewel in Solano County. Fund more arts. Become the Santa Fe or Ashland of Northern California. Now there is an initiative that would truly serve the lives and economic future of your constituents. Act with vision. Demonstrate that democracy is not dead.

Sincerely

Marc Lancet
 Professor of Fine Art
 Solano Community College

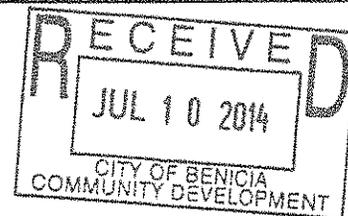
Marc Lancet
www.marclancet.com

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Solano Community College
4000 Suisun Valley Road.
Fairfield, CA 94534

Check out *Japanese Wood-Fired Ceramics* Marc Lancet Co-author

Amy Million - Re: Valero Crude By Rail Project

From: Jim Minkel <jrminkeliii@gmail.com>
To: <amillion@ci.benicia.ca.us>, <bkilger@ci.benicia.ca.us>
Date: 7/10/2014 3:33 PM
Subject: Re: Valero Crude By Rail Project
CC: <info@beniciaCBR.com>



Hello

I wanted to voice my feelings on Valero's Crude By Rail Project. As a resident of Benicia for 30 plus years and a Valero employee for the past 11 years, I feel this project is needed for both Benicia and Valero. This project will produce long term jobs for the area and allow Valero to stay competitive in the refining business. Valero is and has been a good neighbor to Benicia and the community at large. The DEIR was long and through process and shows the project will have many benefits to the Bay Area. I feel that the prompt approval of Valero's Crude By Rail project is the right thing to do and will make Benicia a better place to live and work. The same community where my children live and go to school in.

Thank you for your time and prompt approval of Crude By Rail.

Jim Minkel
577 Cooper Dr
Benicia, CA 94510