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Comments: Phillips 66 Rail Spur Expansion – Santa Maria Refinery

I wish to comment on the proposed crude by rail expansion at the Phillips 66 Santa Maria Refinery in California.

I have a BS in Chemical Engineering and 35 years work experience in the Natural Gas Business as an Environmental, Process, and Safety Engineer as well as a Management Position in charge of a work force of 115 employees. Part of my work experience is with Phillips Petroleum Company for 23 years (1973-1996) in the upstream operations in Texas, Oklahoma, Kansas, North Dakota, Colorado, and New Mexico. As a retired Professional Engineer in Texas, my comments are in line with the Canons of Ethics for Professional Engineers.

My Comments are as follows:

- A. The location is extremely close to the Pacific Ocean and is less than 2 miles on the 1,644 acre refinery property. A potential spill could reach the water and this issue needs to be addressed further as this is a large project handling 546 million gallons of crude oil per year.
- B. The CPC -1232 rail cars have been involved in low speed accidents as detailed in various media reports. They are not the best in the industry and have thin shell and lack the special safety features in the new DOT - 118 rail cars proposed in the summer of 2014 by PHSMA and DOT. Items that should be included in this to make a safe and secure Tank Car are as follows:
 - Manufactured for 286,000 pound capacity
 - Meet AAR Rollover Protection for 40 CFR, Part 172, Packing Group I,II, and III
 - Equipped with ½” Full Head Shields
 - 3 million-mile under-frame for high mileage service
 - Engineered with 9/16 inch normalized Steel Plate

BRW-01

BRW-02

- 4" Full Port Low Profile Bottom Outlet Valve with both visual and mechanical stops w/o Handle
- Top Fittings with Thermowell, Sample Line and Magnetic Gauging Device
- 3" Full Port Loading Connection
- Vacuum Relief Valve
- High Flow Reclosing Safety Relief Valve
- 2" Full Port Vapor Connection
- Jacketed with 11-Gauge Steel and weather tight for Thermal and Fire Protection
- Thermal barrier to withstand a 30 minute torch fire
- Insulated to withstand a 100 minute pool fire

BRW-03

To use any rail car of lesser standard increases the potential for either an unsafe act or unsafe condition that need to be addressed in the Process Hazard Analysis.

- C. The fire fighting capability is limited to a very low risk scenario with limited both water and foam agents on site. From the Phillips 66 Company documentation.

Fire Protection and Safety System

A new fire protection and safety system would be installed for the unloading rack, consisting of fire detection equipment, safety showers, eyewash stations, pumps, hydrants, controls and piping. The unloading rack would be equipped with a foam sprinkler deluge system and firewater monitors with foam generators at the unloading rack periphery. The foam spray system would require a foam concentrate storage tank. The system specifications are provided below. The project would also include a secondary Emergency Vehicle Access route from the eastern end of the rail spur to Highway 1.

Foam/Water Deluge System

- Square footage under canopy: 32,860 ft²
- Divide under canopy area into 5 zones of 6,572 ft² each
- Assume two adjacent zones will be activated in a fire
- Design density = 0.16 GPM/ft²
- Flow rate required = 2 x 6572 x 0.16 = 2,104 GPM
- Provide additional flow of 2 x 500 GPM monitors = 1,000 GPM
- Total fire water flow required = 3,104 GPM
- Activation of deluge valves via manual pull stations (valves) or pilot sprinkler line
- Pilot sprinkler line shall have fusible heads rated at 175oF
- Bladder tank for foam concentrate storage sized for two consecutive activations of two adjacent zones.
- Pressurizing of line downstream of deluge valve activates pressure switch for remote alarm and pressurizes hydraulic valve that opens to allow foam concentrate flow to ratio proportioner
- Assumed foam concentrate is 1% type

BRW-04

The review of this fire protection and safety system by the local responding fire departments is needed to ensure a safe and reliable system. The safe ingress and egress by fire department personnel is paramount to the design of a safe system. Further review and comments from the local fire fighters with 20 rail cars in close proximity is required.

BRW-04

Without the use of Class B Foam Agents a single rail car with 27,300 gallons of crude oil will require the equivalent of ten rail cars or 273,000 gallons of water to convert the energy of the crude oil to steam. The foam agents have a limited shelf life to be effective and the back-up plan of water only, limits the ability to offensively combat a rail car fire.

- D. The batch operation of partial unit trains of crude oil creates a unique security concern with the movement of full and empty rail cars to and from a Union Pacific Rail Car Storage area. Is the UP Storage area as safe and secure as the Phillips 66 Company Rail Car Expansion project?

BRW-05

- E. The project eliminated a steam supply and condensate system in the revisions from the 2013 to the 2014 project and this questions how is a thick heavy tar sand crude oil to be off loaded and pumped to storage tanks. Creative methods such as applying 100 # air to a frozen rail car can result in a catastrophic result if not covered in detail in the Process Hazard Analysis.

BRW-06

- F. The back haul of empty rail cars from California to the North American Oil Fields impacts each community along the rail route the same as full rail cars in regards to wait time at rail crossings, divided towns by slow moving unit trains and emergency response capabilities to citizens on the 'other side of the tracks'. The US Development Crude Oil by Rail Project proposal in Hoquiam Washington (Grays Harbor) proposes to back haul Asian Light Oil to the oil fields of Canada to be used as the diluent for the Bitumen Tar Sand Crude Oil. One of the types of crude oil derived from the Canadian oil sands is bitumen, a heavy, sour oil. Bitumen would not flow through a pipeline efficiently, so it is mixed with diluents to be readied for pipeline transportation as diluted bitumen, or 'dilbit.' Diluents are usually natural gas condensate, naphtha or a mix of other light hydrocarbons. Is this an opportunity for this project?

BRW-07

G. Statistics for the Phillips 66 Company - Santa Maria Crude By Rail Project Information Only

20 Car unloading Facility	2.184 MM Gallons per Unit Train
5 trains per week	10.920 MM Gallons per week (5 Day)
80 rail cars per train	15.288 MM Gallons per Week (7 Day)
27,300 Gallons per Rail Car	13 MM Barrels per Year
250 Trains per Year	35,616 Barrels per Stream Day
2.18 MM Gallons per Train	20,000 rail cars per year

Thank you for the opportunity to comment on the Phillips 66 Company – Santa Maria Crude by Rail Project.

Sincerely,

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