

100 Years at the Wood River Refinery

BROUGHT TO YOU BY THE
WOOD RIVER REFINERY HISTORY MUSEUM

SLOWLY BUT SURELY



Trumble Unit Heater Brickwork

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Construction of the Wood River Refinery continued in July 1917, however increasing problems with delays in materials delivery began to take its toll on the construction schedule.

As Mr. Engelbregt had predicted, the construction of the Wood River Refinery was not

progressing as quickly as the Cushing Refinery construction had. The delay was a direct result of World War I.

There were wartime shortages of practically everything needed to build a refinery. Freight cars had little space remaining to deliver supplies, and the sky-rocketing cost of living creat-

ed labor unrest. Materials that were available came in sizes not acceptable for refinery construction, while materials that were the proper size often did not meet quality standards.

These same difficulties were also affecting the construction of the Cushing Pipeline.

COMING DOWN THE "PIPE"

From the very beginning, the design for the refinery located in the middle of the country included a new pipeline from the Cushing, OK oil fields to the refinery location near Wood River, IL. The 10-inch diameter pipeline would be approximately 428 miles in length, capable of providing a minimum of about 11,000 barrels of crude oil per day with a maximum of 24,000 barrels per day.



Materials traveling through Drumright, OK (9 miles from Cushing)

The designers knew this pipeline would be a challenge since it had to cross two large rivers—the Arkansas and the Mississippi. This pipeline was to be the first of many to cross water. The designers calculated that the new pipeline would have to be under construction before the groundbreaking for the new refinery.

With most of the Cushing pipeline design completed, the pipeline company began ordering materials in July 1916 after the Sanderson and Porter Corporation submitted the construction estimates. They had been instructed to base the estimates on assuming full responsibility for the entire job, including location and design of the line as well as acquiring equipment for the pumping stations.

The corporation instituted a new design concept for the pumping stations. For the first time, diesel engines would power the pumps. Diesel engines were new to America, and this design represented a

large departure from basic pipeline design.

The engines and pumps were obtained from the Allis-Chalmers Manufacturing Company, the same supplier of the pumps for the Valley Pipeline (operated by Shell Company) in California. The piping was obtained from the Youngstown Sheet and Tube Company.

The first shipment of material was received at Cushing in March 1917, and construction

began in earnest.

From California, Sanderson and Porter brought the same kind of ditch-digging, pipe-screwing, and trench-filling machinery that was used to build the Valley Line. In addition, the company also brought several "experienced" mules that had worked the Valley Line construction.

Even with all the labor-saving machinery, a very large work-

force was still needed. The new pipeline from Cushing to Wood River was about three times longer than the Valley Line in California. In addition, there would be unknown difficulties to overcome with the river crossings. At the height of construction, 2,000 workers were utilized to construct the line.

The construction of the pipeline also included the installation of

telephone and telegraph lines along the pipeline right-of-way, five pumping stations, and houses for the future employees of the pipeline pumping stations. Company housing was provided because most pumping stations were constructed in isolated locations.

The nationwide freight tie-up of late 1917 slowed deliveries of pipe, resulting in the complete standstill of construction on several occasions. When material became available, construction crews would work at several points along the pipeline simultaneously in hopes of advancing the project more quickly.

The crossing of the Mississippi River was made in late October and early November 1917 while work on the rest of the line was still incomplete. The pipeline would be completed and ready for operation mid-1918.

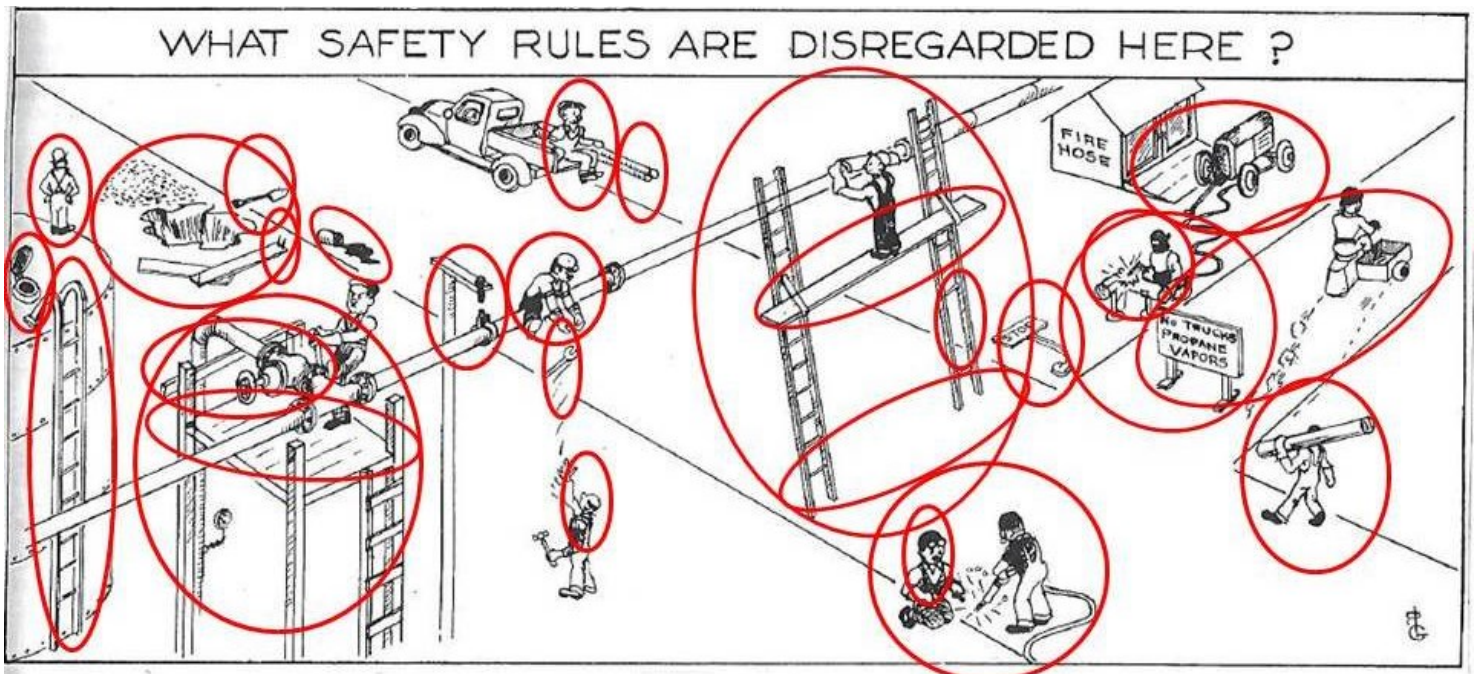


Pipeline Monument in Cushing

Safety Puzzle

In the June 2017 newsletter, we asked you to find at least 15 safety violations in the cartoon below. According to 1942 safety regulations, there are 28 violations in the cartoon. We've circled these in red and listed them below. However, we know that today our safety culture is much more stringent, and a few of you found even more than 28 areas where something could be made safer.

The random winner drawn from the received entries is: [Adam Bremerkamp](#)! We'd also like to recognize the individual who listed the greatest number of safety violations (a whopping 49!!!) - [Ashley Vieth](#)! Both winners may contact Megan Allen to collect their 100th Anniversary prize!



- Tank gauge hatch left open
- Man standing on the edge of the tank
- No back guard on the back of the ladder
- Nails sticking up in board
- Oil spill not cleaned up
- Unguarded excavation
- Shovel laying in the road
- Stationary scaffold not properly braced
- Hand railing missing on stationary scaffold
- Installed hand railing is built improperly
- Hanger broken on overhead pipe
- Piping extending out of back of truck is not red-flagged
- Man riding in back of truck with legs hanging over the back
- Man hanging on pipe to work
- Man below throwing tools to man overhead
- Man not wearing a safety hat when working underneath other workmen
- Man working from board on ladders without back rail
- Ladders not wired off, equipped with safety shoes, or being held by another workman
- No barricades around ladders in road
- Rungs missing in ladder
- Stop sign is not upright and visible
- No barricades around laborers using air gun (jackhammer) in roadway
- Man near operating air gun (jackhammer) not wearing goggles
- Man walking on the wrong side of the road
- Welders electric welding without shields around job
- Firehose building exit blocked
- Scooter going into restricted area
- Welding in restricted area

Trivia Question

How many gallons are in one barrel of crude oil?

And another one just for fun: In 1910, what percentage of homes in the United States had bathtubs?

Answer one or both of these questions by sending your response to WRR.Community.Relations@p66.com. Next month, we'll reveal the answers and select two lucky winners to receive a 100th Anniversary trinket!

FUELING OTHER INDUSTRIES

Just as the world events during this time had an effect on the outcome of the refinery, our refinery and others played an important role in deciding the outcome of other industries.

The automobile, once considered a play toy for the rich, was becoming more prevalent with the introduction of less expensive models. However, the automobile was still a pricey splurge for most people. The 1910 Ford Model T cost \$900-\$950 (production that year was 19,050) while the average wage was \$200-400 per year.

By the time the refinery was designed and construction began, a significant change

was taking place in the petroleum industry. As strange as it seems, gasoline was once considered a by-product of the refining process, but now, driven by the development of a new automotive production method called the assembly line, it was in high demand.

The automobile assembly line had been in existence for many years, but it was Henry Ford who made it a way of life. The actual credit for the assembly line belongs to Ransom E. Olds with the first mass-produced automobile, the Oldsmobile Curved Dash, in

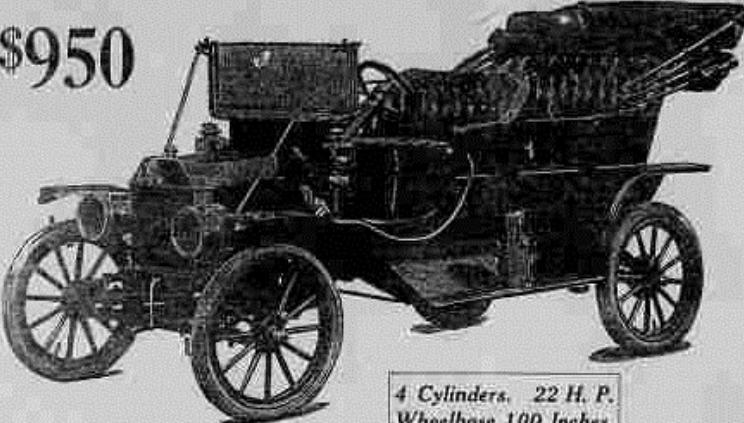
1901. However, the technical advances that improved the efficiency of the system can only be credited to Henry Ford and his team of engineers.

The high demand for the Model T introduced in 1908 was due to its capability to easily handle rough roads. (There were only 144 miles of paved roads in 1908.). As an added benefit, the car was also easy to operate and maintain, and its top speed was 40-45 mph.

ANSWER TO THE AUTOMOBILE QUESTION FOR 1910

FORD MODEL "T" TOURING CAR COMPLETELY EQUIPPED

\$950



COMPLETE EQUIPMENT

(INCLUDES)

Magneto, Tarp,
Wind Shield,
Speedometer, Gas Lamps,
Generator,
Horn, Oil Lamps,
Tools.

PRICE F. O. B. DETROIT.

4 Cylinders, 22 H. P.
Wheelbase 100 Inches.

Absolutely the Greatest Value Ever Offered to the American Public.

YOUR GUESS—If You Are in the Market for A Car—ORDER NOW!

FORD AUTO CO.,

1225 West Broad Street, Richmond, Virginia.
 Telephone, Motomex 2666.

(continued on Page 5)

1910 Ford Model "T" Advertisement

FUELING OTHER INDUSTRIES (CONT.)

Even with a hefty price tag for the average family (comparable to spending \$175,000 today), these user-friendly features put the vehicle in high demand, providing the necessary motivation to build the Model T more quickly and efficiently. Ford's logic was simple – if he could build a car faster, and thus more efficiently, then the price could

12,000 new Model T's, the production was moved to the larger Highland Park, MI facilities.

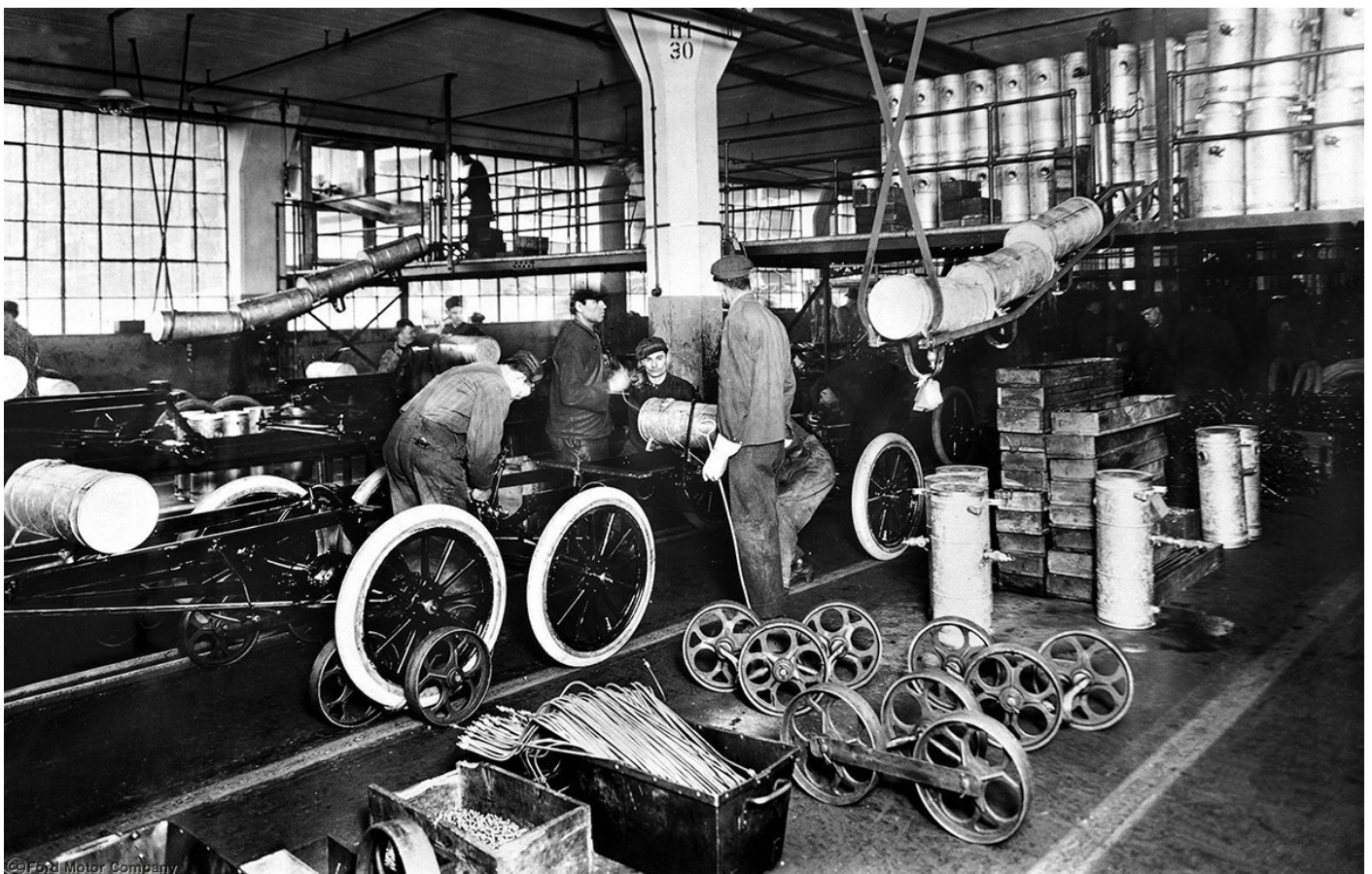
Once moved in, Henry Ford and his engineers began an intensive search to increase production and reduce costs. They would gather ideas from watchmakers, bicycle makers and meat packers and blend

in a high worker turnover. Ford responded to the concerns by doubling their wages to five dollars a day. As a result, the workers could now afford to purchase the very cars they were making.

Because of the new assembly line, the Model T's now came off the production line in three-minute intervals, taking only

cost of \$319 each.

This engineering achievement would have a direct impact on the petroleum industry with the increasing demand for gasoline, engine oils, and petroleum products required by the automotive industry. Advancements in aviation, railroads, and shipping would also have a large



Model "T" Assembly Line at Highland Park Facility in 1913

be lowered, resulting in more cars sold and more profit.

Since the Model T was a hit right from the start, the existing Ford Piquette Avenue Plant in Detroit could not keep up with orders even with additional machines and manpower. In 1910 after assembling

those ideas with their own. By late 1913, the moving assembly line for automobiles was born.

But a problem developed as the workers began objecting to the never-ending repetitive work on the new line, resulting

93 minutes to build the car from start to finish compared to the former build time of 12.5 hours per car. In 1914, the Model T had a consumer cost of \$440 with a production of 202,667 units. In 1922, production reached 1,301,067 Model T's with a consumer

impact on the petroleum industry. The Wood River Refinery would soon respond to the need and capitalize on the demand beginning shortly after the refinery was completed and continuing today.

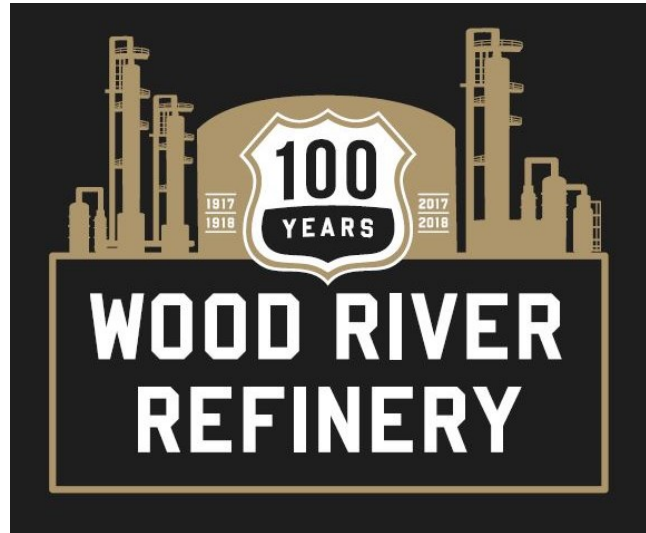
Comments or Suggestions?

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“Coming together is a beginning; keeping together is progress; working together is success.”

~ Henry Ford