'Help us to help you', customers urged

Shell allocates fuel oil to head off shortage

Review Wood River, Illinois

VOL. 36 NO. 1 WOOD RIVER REFINERY JANUARY 1973

Warren Saunders, Refinery Superintendent and Ray Lopez, Chief Technologist, recently passed out the company charters for the eight Junior Achievement companies the Refinery sponsors in Alton and Wood River.

"Help us to help you."

That's the message Shell is sending to its fuel oil customers in a move designed to help head off possible heating supplies shortages this winter.

"Right now Shell's storage tanks are full and refineries are producing at capacity," said executive vice president R. M. Hart. "Still, the heating oil situation is tight, primarily because of the abnormally cold weather that has hit the Northeast and Midwest."

Hart said that in the interest of orderly and fair distribution, Shell has started to allocate supplies to its customers. "We've taken this step in the belief that we must make provisions for shortages this winter," the executive vice president explained.

Hart added that Shell can supply its customers for the remainder of this heating season on the basis of their purchases from Shell during the same period last year.

"Last July we changed our refinery operations to get our fuel oil distribution system as full as possible by the start of winter. By early November, we had built our inventories to a level higher than a year ago," he noted.

"Throughout the rest of the heating season, the company's refineries will continue to produce as much heating oil as possible without causing critical shortages of other products. The reason for the allocation program is to ensure that all of our customers are treated fairly and equitably."

In addition to the cold weather, Hart said the possibility of shortages was brought about by several factors. These include:

Electrical utilities and industrial plants have been forced, for one reason or another, to switch to the lighter fuel oils. They can no longer burn coal or heavy fuel oils because the sulfur content of these products would violate air pollution regulations and natural gas is in very short supply.

Opposition has existed on the part of local government authorities to refinery construction projects which has prevented construction of such facilities in many areas of the country, particularly along the East Coast.

"Supply and demand for fuel oils in our industry looked as if it would be in balance as we approached this winter, but there was little cushion for unforeseen circumstances," Hart said. "We believe continued bad weather has tipped the balance in the wrong direction."

The executive vice president added that the government's recent move to increase imports of these fuels is no guarantee against the threat of shortages in Shell's view.

"We don't believe there is enough surplus product available in the world-wide market to offset the possible shortages in domestic supply," he said. "Shell believes the public and governmental agencies should begin to think about other precautionary measures."

In seeking alternatives, Hart said the following should be considered:

Relaxed air pollution restrictions on sulfur so that electrical utilities and industrial plants could burn coal or heavy fuels in time of crisis.

Allocation programs in case of need.

"One other thing we can all do," the executive vice president concluded, "is to tell consumers how to conserve fuel and electricity this winter."

1972: the year in review

1972 was a big year for Shell and the Wood River Refinery. For the Refinery, it began auspiciously with the logging of 1,000,000 safe manhours in January. It was the first time this mark had been reached at the Refinery since December 1969, and was the 38th time the Refinery had logged such an achievement.

In March of last year, all employees were given a rechargeable flashlight in recognition of the achievement.

"1972 was a good year for safety," Safety Manager Harry Rollins said, "in that we had overall a better safety record than in immediately preceeding years." The Refinery was off to a good start for '73, Rollins noted, saying "we hope to better our record by the continued participation of all Refinery employees."

1972 also saw many unit turnarounds at the Refinery, the biggest of which was the Cat Cracker 1 shutdown, which lasted from September to November.

Three employees at the Refinery Laboratory celebrated long-term anniversaries at Wood River: Cliff Talley and Gordon Rose logged 45 years of service, and Walter Stark went into his 46th year at Wood River.

Remember when?

1972 was also a year for new products. 10W-50 Super-X motor oil made its appearance in the spring as the first SAE 10W-50 oil to be developed by a major domestic oil company. Researchers at the Wood River MTM Lab and Shell Chemical

(Continued on page 3)

Life getting tougher for your car's engine

With the increasing emissions controls on autos, including the lowering of compression ratios, life is getting tougher on a car's engine.

This was high-pointed recently by Ford Motor Company's recent recommendation that motor oil be changed at 4-month, 4,000 mile intervals rather than the previous 6-month, 6,000 miles. The move was prompted by emission certification, rather than any problems with oil quality or engine difficulties.

"It was a necessity," explains John Hughes, Manager Engine Lubricants at the Research Lab. "The quality of the oil plays an important role in keeping emissions equipment efficient," he added.

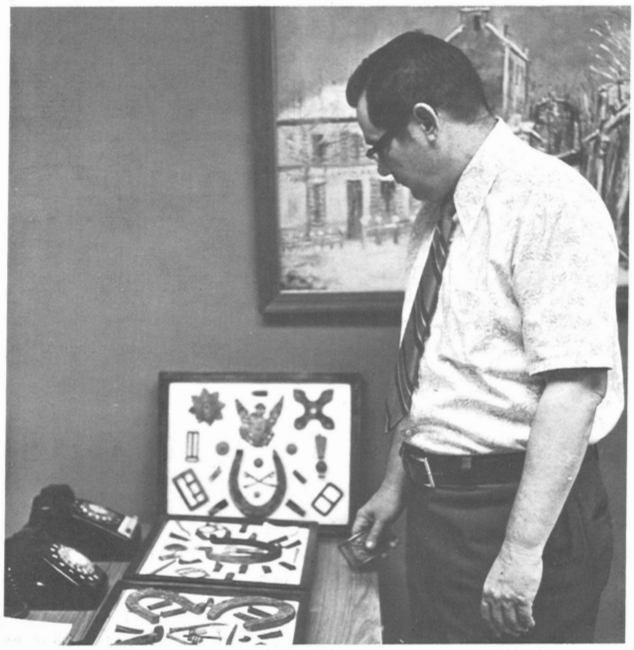
In addition to this change, the Shell Lubricants publication, "Panorama of Lubrication" notes that with the new model cars, API service classification SE level motor oil has become the universal passenger car recommendation. Super-X 10W-50 has the classification.

"The SE oils have some additional qualities over the older SD class," Joe Heithaus, Staff Research Chemist at the Lab said. For instance, these oils have more anti-rust qualities; they resist oxidation in the engine at higher temperatures in the engine compartment, as when towing a trailer or operating in a warm climate.

The newer cars have higher operating temperatures than their older brethren, Joe explained, due to emissions controls and the growing use of auxiliary equipment, such as air conditioning. The new engines' lower compression ratios also make them run hotter.

With the newer engines, and the changes which must be made prior to 1975, the auto manufacturers are becoming increasingly interested in multi-grade oils, John noted.

This, in turn, means a program of continually "upgrading our top line oils; it's an extremely dynamic time," John said.



Mel Niebur looks over his collection of western memorabilia, culled bit by bit from the loose earth around the Custer battleground and the old fort near the scene.

Unearthing America's heritage in the west

America's old west and frontier days have become mythologized and fictionalized to the point that Wyatt Earp and William Bonney seem contemporaries of the Sheriff of Nottingham and Robin Hood.

Then, along comes someone like Mel Niebur to place things in their proper sequence, reminding one of how really young this nation is. Mel is an Oil Movement Supervisor at the Oil Movement Center; his hobby is Americana in general and one of that subject's better known events, Custer's last stand, in particular.

"Basically, my interest began about four years ago when my family and I visited the battlefield on vacation," Mel said. Located in the Dakotas, portions of the battlefield are now a national monument, including the site of the "last stand," Custer Hill.

Running Fight

"Actually," Mel said, "the battle was a running fight and took place over rough country, a path about a mile wide and six miles long." Much of this land is presently in private hands. "Very little has been done to the land around there industrially," Mel noted, "most of it is still ranch land," and geographically the same as when Custer and Ogala Sioux war chief Crazy Horse knew it.

Mel and his family became so enamored of the area and its history that they have returned every year since that first visit. About two years ago, Mel purchased a small metal detector and joined the burgeoning group of historical collectors that have lately been probing underground and into America's past.

"It took me a couple of years to see how easily it could be done," Mel said. In the meantime, he had become close friends with a rancher whose property contains most of the original battleground. With the rancher's encouragement and help, Mel got the metal detector and began unearthing artifacts of those days.

Buckles And Bullets

Mel so far has come up with a number of cartridges, buckles, horseshoes and several cavalry accouterments. "It simply hasn't been a long time since those days," Mel said. "Much of this gear wasn't buried; it was just covered up by dirt over the years, and it's only a couple of feet underground at the most." "One of the things that strikes me the most about that part of the country," Mel said, "is how close you feel to the times there. Most of it is unchanged since the Custer battle in 1876."

The Big Horn river and its more famous tributary have changed courses slightly, Mel said, since the June day Custer and his men rode into the place the Indians called the Valley of the Greasy Grass, and this sometimes throws visitors off in their direction.

Man and Myth

One is brought up short realizing that it has been less than a hundred years since the battle in that valley, since Custer has been turned into a myth, a dime-novel hero, or villian, while the real man remains an enigma to historians.

An excellent cavalry tactician, Custer made his reputation in the Civil War when he became the youngest General Officer in the Union Army. Custer was one of the very few Union cavalry leaders able to stand up to the Confederates' J.E.B. Stuart and Fitzhugh Lee.

In the Indian wars, Custer had had important, though, minor successes. His orders guiding his conduct in the Little Big Horn campaign were open-ended and left much to Custer's judgment, which, if his previous record is any indication, was excellent. It is known that his regiment went into the campaign with poor intelligence, while Indians camped in the valley knew his strength, general position and even the nature of his orders. Custer had reports indicating he was facing 800 to 1,000 Indians, with approximately 250-400 warriors. Custer had prevailed over similar odds before in the Indian wars.

Wheat of Reality

In actuality, the 7th Cavalry faced a huge collection of Sioux and Cheyenne Indians, numbering around 25,000, with anywhere from 4,000 to 5,000 warriors.

From his experience in going over the battlefield, Mel tends to agree with many military historians, contending that Custer, realizing his untenable situation, retreated, looking for a place to "fort up" and unify his command, which earlier he had separated into three contingents.

Unable to do this, his command was obliterated. Shortly after the battle, a military fort was erected nearby, and this land has veiled rich harvests for those like Mel, who help to separate the romantic chaff from the wheat of reality by recovering tangible evidence of things as they once were.

The new car blues affect motorists

The puzzled cry, "What's happened to my new car?" is being heard more and more these days as owners discover that their newly purchased vehicles behave differently from other new cars they've owned.

Drivers complain frequently that their new car dies easily, runs rough under some conditions, gets unsatisfactory gasoline mileage, is sometimes difficult to start and often exhibits "run-on," or "dieseling," that frustrating condition when the engine keeps running after the ignition has been turned off. Some new-car owners also say their cars don't have the pep and zip that they've come to expect.

The conditions do exist, they're real; but they don't necessarily imply that the car owner bought a "lemon," neither do they necessarily mean there is something wrong with the gasoline, nor that Detroit has gotten careless in its engineering. Most of these changes in performance are the consequences of engineering changes designed to reduce automobile emissions.

Most new cars are designed to run on regular gasoline, or a good grade of no-lead or low-lead, such as Shell's Super Regular.

And, needless to say, the gasolines for the newer cars are an important factor in driveability. "We know what the problem is," Jack Armstrong, Research Director at the MTM Wood River Lab, said, "we've pretty well got it catagorized."

One of those problems is the lowering of engine compression ratios. Most new cars have relatively low compression ratios compared to older models, and therefore are less efficient. This means that both fuel economy and power can suffer. So can driveability, defined by Howard Smith of Research as "smooth performance under all conditions; satisfactory acceleration after a cold start and no run-on."

These conditons can be attributed to the carburetor adjustments that have been made on the newer models. Both carbon monoxide and hydrocarbon exhaust emissions decrease sharply as carburetor settings become leaner.

Hence, new cars are designed to run "lean" to help control these automotive pollutants. Earlier cars ran "rich" to provide optimum performance. Now, performance is sacrificed to help reduce exhaust emissions.

With lean carburetors, a new car may stall or die easily, especially when starting with a cold engine. Engine stumble or surging under highway driving conditions can also occur. When combined with fast idle speeds, lean settings may cause engine "run-on."

"Actually," Howard said, "driveability is caused by the cars and the fuels." "The key to driveability--what you aim for--is smoothness," said Charlie Towne, Supervisor of the Fuels Performance Group at the Lab. "And the key to smoothness, in regard to fuels, is volatility," he added.

Volatility is the ability of a gasoline to vaporize in the engine, dependent on its components. "We feel we have a real advantage with Super Regular," Charlie said. "It has bags of volatility, but still is low in lead content," thereby satisfying people with newer cars and old customers as well.

Howard amended Charlie's comments, adding that the fuels situation is "quite a challenge." As the specification for emissions controls change and get tougher coming to 1975, the fuels requirements will also have to change with them.

One final note: if a car having no emission control modifications, is compared with a 1973 model, carbon monoxide and unburned hydrocarbon emissions have been reduced by more than 80 percent. The inconvenience and increased operating costs due to emission control systems is the price a new-car owner pays in helping to achieve this goal.

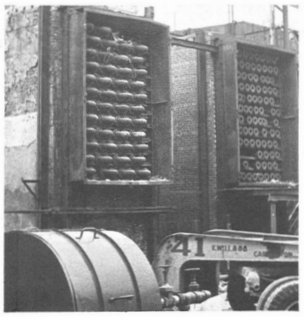
Speaking of safety

As winter deepens and the weather gets colder, carbon monoxide becomes an increasing factor in highway accidents. With windows rolled up tight and vents closed, there is no stream of fresh air to dilute and disperse the odorless fumes. They seep out of a faulty exhaust system and into the passenger compartment where they silently and surely take their toll.

We all know carbon monoxide can be fatal in large doses, but few people realize how small concentrations can affect our driving behavior and judgment. The irritability that accompanies traffic congestion is at least partially due to the presence of carbon monoxide. Other symptoms indicating its presence are headaches, nausea, drowsiness, faintness, and burning or watering eyes.

To avoid the dangers of carbon monoxide this winter, start with a complete exhaust system and muffler inspection. Then make a habit of always keeping a window or vent very slightly opened. You'll stay awake . . . and alive.

Fred Hess



The old trumble heaters, oldest units in the Refinery, came down late in 1972.

1972: IN REVIEW

(Continued from page 1)

Company laboratories combined efforts with Shell Development Company to produce the new wide-viscosity oil.

Hard on the heels of the new oil was a new gasoline: Super Regular, "Big Red," a low-lead gasoline with high-octane components. The new fuel was brought forth due to customer demands and performance characteristics of late model cars. Early indications showed a favorable customer reaction to "Big Red."

Bay Marchand B-21 well came back on controlled production in 1972. It was the scene of the longest offshore fire in history, which was brought under control in April of 1972.

Shell researchers at the MTM Laboratory kept on the road for cleaner engines during 1972 with their specially modified Pontiac.

Shell refineries conservation conscious

(Editor's note: This is the third in a series on Shell's commitment toward environmental conservation.)

Environmental conservation and product manufacturing go hand-in-hand at Shell's refineries.

To control emissions, for example, Shell refineries commonly use:

* Fuel gas treating to remove hydrogen sulfide, which would otherwise be emitted as sulfur dioxide. The recovered hydrogen sulfide is later converted to sulfur and other useful materials. Fuel gas is treated at all Shell refineries except those processing low sulfur content crudes.

* High-efficiency catalyst trapping devices to effectively control the emission of particulates, from catalytic cracking.

* Carbon monoxide incinerators to convert by-product carbon monoxide into harmless carbon dioxide.

* Floating roofs on volatile hydrocarbon storage tanks to control hydrocarbon and odor emissions. For many years it has been Shell's policy to install these roofs on new tanks.

* Specially designed smokeless flares.

* Spare facilities or special operating procedures in case pollution control facilities are shut down.

To control the quality of liquid effluents, Shell refineries use:

* Oil/water separators to remove oil, and water/solids separation to remove solids from the effluent.

* Facilities to process oily ballast from marine vessels in the refineries' effluent treating systems.

* Large ponds to allow examination of effluent quality before discharge into public waterways.

* Sour water stripping (where necessary) to remove hydrogen sulfide from the effluent before it is treated.

In addition to these standard items, a number of specific major facilities have been recently completed or are planned at individual refineries.

At the Anacortes refinery, for example, the effluent treatment system incorporates two-stage biotreatment (trickle filter followed by activated sludge). This highly sophisticated system was provided to ensure that the effluent would not bother clamming and crabbing in waters near the refinery--or harm the highly-prized oyster beds there.

To increase the refinery's oil spill cleanup capability, $75,000 worth of equipment is being purchased, including a work boat, oil skimmer and containment boom. A second ballast storage tank is also being constructed at an estimated cost of $250,000 to handle an expected increase in the amount of oil ballast from tankers.

The Martinez refinery's truck loading facilities are equipped with a vapor recovery system to control hydrocarbon emissions. In addition, a number of other pollution control devices are being installed, including a $360,000 by-product oil stripper and $85,000 worth of oil spill containment equipment. An effluent biotreating system has also been built at a cost of $2.1 million.

Air pollution control is also receiving considerable attention at Martinez. Three electrostatic precipitators are being installed on the catalytic cracking unit flue gas stream to control particulate emissions and plume opacity. These precipitators will constitute the fifth catalyst recovery stage of this unit. Total cost of the units is almost $3 million.

To control visible emissions of vent streams, vapor collection scrubbing systems are being installed. About $410,000 will be spent this year for these facilities.

At the Norco refinery, neutralization facilities have been installed to treat alkaline wastes. These facilities were completed early this year at a cost of $630,000.

At Ciniza, no liquid effluent is discharged. Water that is not recycled for use is evaporated from a large pond. A number of test wells have been drilled to monitor underground water quality to assure that these water supplies are not endangered.

As at Anacortes, the Houston refinery employs two-stage biotreatment of water effluent. A fourth-stage catalyst recovery system is also used on the catalytic cracking unit to minimize catalyst losses to the atmosphere.

The Odessa refinery, like the one at Ciniza, discharges no liquid effluent. After treatment, the Odessa effluent is used with a sprinkler system to irrigate adjacent Shell-owned property.

At the Wilmington refinery, substantial water treatment facilities have been added in the last three years with more than $1 million spent in 1971 to significantly improve oil/water separation, oxygen demand and suspended solids removal, and to provide additional effluent impounding capacity. An additional $690,000 will be spent this year to complete this program.

An air oxidation column is presently treating a sour water stream in the refinery. To further improve the quality of the oxidized stream, a sour water stripper was added this year at a cost of $635,000. An improved control system is also being provided for eight boilers to reduce the likelihood of smoking incidents. Cost for this system is estimated at $225,000.

At the Wood River refinery, liquid effluent is treated in an extensive treatment system consisting of primary oil and solids separation; flocculation and aeration in a second stage of oil/solids separation; a holding pond to further remove solids; biotreatment in a trickle filter to reduce biological and chemical oxygen demand; and final lagoons to allow oxygen enrichment and examination of treated effluent.

SERVICE ANNIVERSARIES

Ollie Lindquist
Engineering Field
35 years

Joe Paulicka
Dispatching
35 years

Cecil Davis
Engineering Field
30 years

Bob Monaghan
Refinery Laboratory
30 years

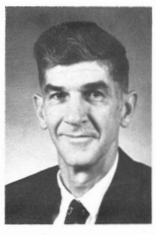
Ralph Porter
Dispatching
30 years

Smokey Donnelly
Engineering Field
30 years

Willis King
Refinery Laboratory
30 years

Beans Heim
Engineering Field
30 years

Phil Leininger
Hydroprocessing
30 years



Vern Oehler
Light Oil Processing
30 years

Lee Rich
Refinery Laboratory
30 years

Louis Bensman
Engineering Field
25 years

(Continued on page 4)

SERVICE ANNIVERSARIES

(Continued from page 3)

Duward Worley
Hydroprocessing
25 years

Sam Grider
Engineering Field
25 years

Andrew Knopik
Dispatching
25 years

Merle Pacatte
Lubricants
25 years

Jake Henderson
Engineering Field
25 years

Luing Isom
Engineering Field
25 years

Jim Snover
Engineering Field
25 years

Tuck Tucker, Jr.
Refinery Lab
25 years

Ed Caveny
Light Oil Processing
25 years

Delly Delehanty
Refinery Lab
25 years

Walter Weiss
Safety
25 years

Tony Vatole
Engineering Field
25 years

Bruno Traina
Distilling
25 years

Omar Wussler
Treasury
25 years

RETIREMENTS

Gilbert Koch
Engineering Field

Hugh Burnham
Research Laboratory

John Pavlotich
Engineering Field

Elton Schaefer
Light Oil Processing

Frank Urban
Engineering Field

Harold Stropes
Engineering Field

Cletus Maurer
Engineering Field

Hugh Wetter
Hydroprocessing

James Chandler
Engineering Field

Al Patton
Engineering Field

George Graddy
Light Oil Processing

Oscar Muskopf
Research Laboratory

Owen Howdeshell
Hydroprocessing

Red Donham
Hydroprocessing

Lawrence Poeling
Engineering Field

Clemence Echele
Engineering Field

Howard Buettner
Engineering Field

Walter Oerke
Engineering Field

Joe Paur, Jr.
Engineering Field

Review Wood River, Illinois

VOL. 36 NO. 1 WOOD RIVER REFINERY JANUARY 1973

Published monthly for the employees and pensioners of Shell Oil Company's Wood River refinery and research laboratory.

Bill Morris, editor

SHELL OIL COMPANY
P. O. Box 262
Wood River, Illinois 62095

Bulk Rate
U.S. Postage
PAID
Wood River, Ill.
Permit No. 229