VOL. 37, NO. 4

WOOD RIVER REFINERY

APRIL, 1974

Catch that catalyst

In about a year, there'll be some "rapping" going on at the cat crackers.

Actually the rapping, or tapping, will take place inside two new electrostatic precipitators to be built between now and next summer. The precipitators are designed to capture almost all the minute catalyst particles from cat cracker flue gases.

Although the current system of cyclones is darned efficient in removing catalyst from the flue gases (over 99 percent so), the State of Illinois wants it even better.

Capturing Catalyst

But what's this rapping bit? Well, here's how the system works.

Cat cracker catalyst is a fine, white, powdery substance. After it does its cracking job in the reactors, the catalyst is coated with carbon, so it must be sent to the regenerators where the carbon is burned off.

Flue gas from the burning process is routed through internal cyclones in the regenerator where most of the catalyst is recovered by the centrifugal motion of the swirling gas. Additional catalyst is removed in a set of external cyclones.

The flue gas (now with less than one percent of the catalyst remaining) passes through a CO furnace where carbon monoxide is changed to harmless carbon dioxide and released through the furnace stack to the atmosphere.

State directive
But there's the rub. As efficient as the system is, the
amount of catalyst escaping to
the atmosphere with the carbon dioxide must be reduced
before June, 1975, per the

state authorities.

grounded.

To achieve this, the precipitators are going to be added to the system as a step after the CO furnace. Each precipitator is an enormous box with a series of hanging devices ("plates") in it. An electrical charge will be present in the precipitator atmosphere, while the plates will be

As the gas/catalyst moves slowly through the precipitator, the charged catalyst will tend to stick to the plates by static electricity. (If catalyst were lint, these would be the world's largest lint accumulators - better even than a blue serge suit.)

Rapping

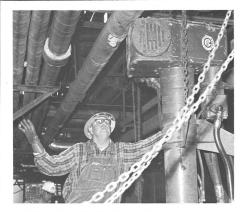
OK, here comes the long awaited rapping. To get all this

adhered catalyst off the plates, they are gently rapped (or tapped, or jiggled) so that the accumulated catalyst falls into hoppers and is then taken out of the precipitator and not released to the atmosphere.

These precipitators are huge. Each has total collecting surfaces on the hanging plates of over 87,500 square feet. When set on their supports each will be 64 feet high. Without supports--just the boxes themselves--the two precipitators together are about the size of the new addition to the main office.

Pat Nelson is the project engineer. He has been working on this project off and on for over five years. But not until the fall of 1972 when the environmental requirements were specifically defined by the state did detailed development work begin.

Pat is finalizing the construction details and construction will begin this summer. Pat said, "We expect this schedule will see the precipitators finished by the deadline. Our biggest worry, though, is one we're hearing a lot of these days ... a shortage. This time it's steel. Delayed shipments could cause us a few headaches, but we expect to cope with them."



WHAT'S GOING ON HERE? Pipefitter Frank Stringer looks like he might be leading a symphony orchestra. In fact he's "orchestrating" the lowering of 2½ tons of equipment in tight quarters at the Cat Cracker shutdown. When it comes to rigging a job, Frank is considered one of the best. Here he watches closely as crane operator Les Viano (not shown), maneuvers the load. SEE MORE SHUTDOWN PICTURES ON PAGE 4

Government says 'get the lead out' by July 1

Shell will market unleaded gasoline by July 1, 1974, to meet the Federal Environmental Protection Agency (E.P.A.) regulations. The new gasoline is required to maintain the effectiveness of the catalytic converter systems that will be installed on many of the 1975 automobiles.

Since lead in gasoline will coat the catalyst in these mufflers and render them inoperative in a relatively short period of time, unleaded gasoline is mandatory to protect these systems.

To make sure that only un-

leaded gasoline is placed in the tanks of these cars, a smaller tank opening will be provided which will require the use of a special nozzle spout.

It will be illegal for the dealer, the dealer's employees or his agent to dispense a leaded gasoline or allow it to be dispensed into the gasoline tanks of those cars equipped with the smaller fill opening. Special signing will be required, not only on the pump islands of service stations, but also at the nozzle entree point on the automobiles them-

Safety Committee marks fifth year

By the age of five one might not be expected to have accomplished much of note. But when the Safety Committee sat down to its April meeting they were marking their fifth birthday, and much had been achieved.

Prior to the meeting, Ed Ballman, refinery manager, and Jerry Terry, administrative superintendent, joined the group in a discussion about how the formation of a Safety Committee at Wood River came about and its accomplishments over the past five years.

Ed commented, "It's no secret that beforehand some management people were

concerned about whether or not discussions would pertain only to safety and how constructive they would be. But those fears have proven to be unfounded. This has been a dedicated and constructive group, and I believe safety consciousness at the refinery has gained because of it."

Joe Barra, carpenter and one of three members of the committee to have served since its inception, said, "The folks out in the plant weren't without fears either. We thought management would say 'no' to all our suggestions, but it hasn't worked that way at all. We haven't always agreed, but all items have been discussed sincerely, and I'd say the biggest portion have been acted upon positively and mickly."

In addition to Joe, other original members still serving on the committee are Erv Keister, operator in Dispatching, and George Myers, operator in Cracking. Harry Rollins, manager Safety, and Emmitt Nelson, manager Engineering Field, have served as management spokesmen since the group was formed.

Since April 1969, 556 different safety items have been discussed and acted upon. Many have been concerned with specific conditions ("one-shot items"), but also basic safety procedures, such as that pertaining to electrical lockouts, have been modified and improved upon as a result of Safety Committee discussions.

Safety Committee members are vocal in their opinions

about safety and the Safety Committee concept. Some of the comments heard:

George Myers: "The Safety Committee wasn't the beginning of a safety program here at Wood River, but it has certainly helped create safety consciousness in the refinery from top to bottom. The lines of communication have been enhanced"

Erv Keister: "It seems to me more people are talking about the positive side of safety these days—not just complaining about an unsafe situation here and there. Or, when there's something that needs to be cleared up there's more cooperation—especially at lower levels."

Willie Coffman, pipefitter: "I like to think of the Safety Committee as having opened another avenue to more safety awareness in the field. Sometimes we all need to be reminded to keep practicing safety. Just because a particular situation is resolved doesn't mean everybody is automatically going to be safety conscious all the time. The current safety programs help keep safety before everybody's eyes."

Maurice Miller, machinist:
"This committee isn't the only
one that talks about safety.
Many things taken up with
management are handled
without need for discussion in
this committee. It's good to see
safety talked about and resolved at departmental levels."

Dave Grieve, special tester: "Safety inspections and action on particular problems are more expeditious, detailed and accurate these days. You can see improvements from month to month. Oh, of course, there are always a few isolated items that drag, but by and large it's good."

Al Moody, boilermaker: "I guess I'm about the newest member of the committee. My fellow workers sometimes kid me by asking if they are doing something the safe way. They may act like they're kidding but, really, they are serious about good safety. If you can get people talking and thinking about safety you're on the right track."



(FRONT TO BACK): Fred Hess, safety supervisor; Dave Grieve, special tester; Emmitt Nelson, manager Engineering Field; Ray Lopez, superintendent operations Light Oil Processing; Al Moody, boilermaker: Paul Johnson, staff engineer Engineering Services.



(FRONT TO BACK) Harry Rollins, manager, Safety; Erv Keister, operator Dispatching; George Myers, operator Cracking; Willie Coffman, pipefitter; Joe Barra, carpenter; Andy Dick, superintendent operations Lubricants; Maurice Miller, machinist.

'Super' oil helps your car

Over 100,000 miles and still going strong. You'd be surprised how long that old buggy of yours could last with a little tender loving care and proper maintenance with quality pro-

Shell made an extensive survey of over 1,000 marketing fleet cars and found that even after many miles there was little change in horsepower, acceleration or fuel and oil economy. Only six of the cars had ever had a major engine repair -- a repair requiring cylinder head removal or block breakdown with costs exceeding \$75.

The cars--1968 models and later--used Shell multigrade motor oils developed here at the Wood River Research Laboratory.

Product development

The Wood River Lab has specialized in product development for over 35 years and is equipped with sophisticated equipment, competent chemists and engineers, and skilled technicians and craftsmen to do the experimentation and testing required to come up with new and improved products.

Regarding the motor oils used by Shell fleet cars, John Hughes, manager of the Engine Lubricants Department in the Lab, said, "We have a small group of chemists, engineers, technicians and mechanics who devote their full time to the development and testing of engine lubricants, but in fact it's a team effort involving much of the Research Lab as well as the Refinery Lab and operating personnel '

According to John, Shell is unique in its approach to this product development: "I believe we are the only company that does all the developing ourselves. Others go to the additive companies and ask them to come up with a package to achieve certain results. We say 'give us the additives separately and we'll devise the best mixture ourselves.'

SUPER SHELL X® 10W-50, one of the most advanced motor oils on the market

See results in

story on pg. 3

today, was developed at Wood River. John said, "A great deal of experimentation, lab testing and road testing was done here at Wood River, but the true results are seen in the cars which use it over day-today, long mileage driving, like the fleet cars. We're gratified with the results."

Six additives

He continued, "SUPER X. for instance, has six different additives, each doing a specific job of its own. For instance, there is a viscosity index improver (a Shell proprietary additive) that gives the oil its multigrade properties. It reduces the oil's thinning out at high temperatures.

The oil industry is re-

peatedly being charged with

withholding heating oil,

gasoline, and other products

from the public while storage tanks are "filled to the brim,"

tankers are coming in as fre-

quently as ever, and some are

sitting in harbors waiting for

In response to such charges,

• Why the full tanks? The oil

industry gears itself to meet

two peak demand periods: the

winter heating season and the

summer driving season. De-

mand during both peak

periods exceeds manufactur-

ing capability. Therefore, in-

ventories are built prior to the

beginning of these peak

periods to make up the differ-

prices to go up.

here are some facts:

Full tanks/tankers?

"And there are other additives that prevent sludge and corrosion in the engine. I think the most essential, however, are the 'EP' (extreme pressure) agents. They take over the lubrication in places where oil is squeezed out by extreme metal to metal pressures. The interface between the cam shaft and the cam followers (valve lifters) is an example. Without the EP agents the metals would weld together in tiny spots and then tear away again when the cam turns. That certainly wouldn't help engine life much.'

Engine testing

The Research Lab does extensive testing on engines of all kinds -- right in the lab. They are set up on special stands and run at varying speeds for varying times, some the equivalent of 50,000 miles or more.

The engines are then dismantled and carefully inspected for wear, deposits and the like. Two similar engines may be run side by side with different oil/additive mixtures to see how each stacks

John Hughes said, "SUPER X 10W-50 is a real premium product, but we're continuing our efforts to improve on it. Lubricant requirements of engines are constantly changing. The present efforts to reduce emissions, for example, will have a big effect on the types of oil which will do the best job in the future. It's our job to foresee these changing needs and have a top quality product ready to meet them.



TEST RUN. As research mechanic Fred Windisch removes the second valve cover, research engineer Don Evans makes a preliminary check for deposits of wear, and Floyd Albert, senior lab technician, makes note of their impressions. All three have been closely associated with the testing of lubricants.

Sports and shorts

Mistaken identity

Last month in the "On the job" column it was purported that Jim Akers, pipefitter, carried a can of chewing tobacco in his pocket. Jim informs us that that was a roll of tape, and as for chew -- he never touches the stuff. Sorry, Jim.

Softball season will begin Tuesday, May 7, at Kendall Hill. If you're an expert with the glove or bat, or are interested in umpiring, contact Winston Wallace in the refinery lab.

Spring Dance

The annual SRA Spring Dance will be held Friday, May 3, at Collinsville Park. Trip the light fantastic or just tap your toe to the music of the Al Rezabek orchestra. Activites will begin at 8:30 p.m. and last until 1:00 a.m.

Free food, refreshments and setups will be available, and prizes will be drawn. Plan to attend. Price per couple will be \$4 for SRA members and \$7 for guest couples. Guest tickets can be purchased at Employee Relations; others at the door.

OK all you hackers, dust off those sticks and get ready for the annual SRA Golf Day. It will be held Saturday, June 8, at Cloverleaf Golf Course on Fosterburg Road, Alton. Following golf will be a chicken dinner and refreshments at the Wood River Moose Lodge. Starting at 8 a.m. Monday, May 20, you can make tee time reservations by calling Charlie Gibson in Light Oil Processing.

He's in the swim

Mark Armstrong, son of Jack Armstrong, research director, is one of the better swimmers in these parts and he has the medals to prove it. Currently the St. Louis high school title holder in the 100-yard and 200-yard breast stroke events, Mark added to his laurels by placing second in the 100-yard breast stroke at the Missouri State high school championships in early March. Mark is a senior at McCluer High

Six Flags

Be a Six Flags Fun Seeker! The SRA, in cooperation with Six Flags Over Mid-America, is making available special family passes which discount the entry price to the park by \$1.00 for each and every member of the family.

The passes are good for the entire season. You do not have to be an SRA member to be eligible -- just an employee, retiree or spouse of a deceased employee or retiree. Six Flags, which is located southwest of St. Louis on I-44, is now open on weekends, and starting May 26 will be open seven days a

If you'd like a Fun Seeker card, see one of the SRA board members or stop by Employee Relations. They are free



ANNIVERSARIES



Earl Doty



Ollie Rutz L. O. Processing Lubricants 30 years



Engr. Field 25 years

Bill Speciale

CLASSIFIED ADS

For Sale Color TV. RCA console. 25 inch. New picture tube. \$140. C. Woolfolk. 618-656-7528

Electric calculator. Electric adding machine. LloydWhitworth 618-633-2351. (Evenings between 6 and 8.)

Window air conditioner. Sears, 14,000 BTU. Used 3 months. G.E. furnace. 80,000 BTU. 2 years old. L. Bruhn. 618-459-7154.

Two tires. Goodvear whitewalls. Mounted on Chevy wheels. One is brand new. G78x14. \$30. Jerry Rolfingsmeier. 618-637-2462.

Polara or 1966 Dodge Dart 56,000 miles and 116,000 miles. \$250. Appaloosa gelding, 3 years old. Low mileage. \$75. 618-656-0174

Two cars and a horse, 1963 Dodge

Wanted Exercise bicycle. Joe Haufe. 618-462-0139.

Ball point pen. Military insignia Identify at Employee Relations.

Distillate tanks, which include heating oil, are full by December 1st of each year. Then in February, toward the end of the winter season, refineries increase the output of motor gasoline and continue depleting the inventory of distillates. Refinery output again swings in August as the driving season draws to a close in order to fill the heating oil tanks before winter. There is no other feasible way to oper-

• Why are tankers sitting in harbors? It would help in answering this question if specific details such as the names of the ships and the ports involved were known. Without such details it's only a guess that any tanker seen sitting in a harbor was waiting for berth to unload it's cargo. It is not unusual to see as many as five ships waiting at a port to be unloaded. It is also not unusual for the unloading process to take eighteen hours. Consequently, it is possible that an observer could see a tanker waiting for a berth one afternoon and return to see it still waiting the next day.

The problem begins when such an observer concludes that the ship is waiting for prices to go up. Using tankers for storage is not using them to maximum advantage.

Still going strong at 100,000 miles

Using Shell multigrade motor oils and proper maintenance, owners of 1968 and later model cars have an excellent chance of getting 100,000 miles of service from their cars without major engine repairs.

Furthermore, they can expect little deterioration in horsepower, acceleration, fuel or oil economy as their cars reach the high mileage mark.

These conclusions were drawn from an extensive survey of over 1,000 Shell marketing fleet cars. They were confirmed when Shell gathered 23 of these fleet cars from all over the country and two others run exclusively on Shell products and had the mevaluated by Automotive Research Associates (ARA) of San Antonio, Texas. ARA is an independent automotive and petroleum testing laboratory.

All 25 cars had more than 100,000 miles on them. They had been driven under conditions encountered by most motorists--winter starts and warm ups ... stop and go driv-

ing in heavy traffic ... and at sustained highway speeds in hot weather.

All were equipped with the standard engine for that model (23 were V-8's), automatic transmission and air conditioning.

Before testing the cars for performance, each engine was tuned-up including new plugs, points, condenser, air filter and PCV valve. A new carburetor was installed and adjusted.

Oil and filter were changed and, as necessary, replacement of fan belts, radiator hoses, battery, electrical wiring, emission control systems, brakes, tires, lights and exhaust system were made. Front ends were checked and aligned.

Evaluations were made on gas mileage and acceleration and the cars were run on a chassis dynamometer to compare horsepower with the manufacturer's new car rating for that model.

The results are at the right. How do you think your car would stack up?

Fuel Economy, MPG Accir. New % New 50 70 0-60 mph Vehicle Mileage mph mph mph Seconds Car Car 100 1969 Buick Skylark 104,047 20.4 18.9 14.8 90 103,200 21.6 21.4 16.7 98 90 100 1969 Buick Skylark 100 1969 Buick Skylark 106.690 20.5 18.4 14.7 12.7 96 90 105,245 19.0 15.0 90 92 1968 Chevrolet BelAir 21.4 13.9 1970 Chevrolet BelAir 102,871 19.1 18.2 15.5 90 78-94 100 15.2 1970 Chevrolet BelAir 106,166 17.0 13.9 14.1 100 1970 Chevrolet BelAir 102 584 22 6 20.7 15.5 91 78-94 100 14.1 15.5 109,862 21.7 20.2 1968 Chrysler Newport 117 120 115 100 1968 Ford Custom 121.989 18.9 14.5 14.4 1969 Ford Custom 500 101,219 20.8 18.9 15.2 79 75 100 15.9 1969 Ford Custom 500 105.548 23.3 21.0 15.8 81 75 100 13.5 100 64-80 1970 Ford Custom 500 102.112 22.0 20.0 15.8 14.0 78 111,203 23.0 21.3 16.4 64-80 1970 Ford Custom 500 15.1 100 1970 Ford Custom 500 120.332 21.6 19.4 16.3 15.2 64-80 101,767 20.4 18.8 14.5 79-95 100 1971 Ford Custom 500 11.7 85 100 1971 Maverick 173.936 26.9 25.8 20.1 47 33-49 16.4 100 22.5 49 33-49 1971 Mayerick 139.213 31.1 27.1 16.3 95 107.564 18.9 15.4 105 110 1967 Mercury Monterey 11.6 118,660 23.7 20.6 16.8 N/A 1968 Plymouth Fury I 11.6 N/A 85 1969 Plymouth Fury II 102.300 21.7 20.2 15.9 10.9 93 85 100 107,341 24.6 20.9 16.2 100 85 100 1969 Plymouth Fury II 11.7 1969 Plymouth Fury II 106,188 21.4 18.2 15.3 100 13.2 1969 Pontiac Custom S 101,328 19.6 19.3 15.9 90 100 12.9 1969 Oldsmobile Cutlass 104.572 17.5 15.5 124 75 92 82 15.9 94 104.154 1969 Oldsmobile Cutlass 22.2 21.8 17.4 9.6 87

Average 110,000 21.8 20.1 16.0 13.4 — — 98.7

RETIREMENTS



Paul Hofmeier Engr. Field 45 years

Andy Anderson

Dispatching

31 years



James Watson Refinery Lab

Walter Frohock

Purchasing



Cy Wenger Engr. Services 40 years

Harold Wagner

Engr. Field 30 years



Joe Paulicka Dispatching 36 years

John Bonifer

Engr. Field



Blackie Lain Engr. Field 35 years



Mike Mygatt Engr. Field 33 years



Earl Cox Engr. Field 29 years



Charlie Tassinari Lubricants 28 years

Job related classes may be reimbursable

If you are taking courses at one of the local schools during your leisure time, it could be that Shell will reimburse you for part of the cost. Under Shell's Educational Reimbursement Program, employees taking courses in college, adult education, or trade schools may be eligible for 100 percent reimbursement of out-of-pocket expenses for tuition, registration, and required laboratory or similar fees. (Not included are books. parking and other miscellane-

But before you dig out your old check stubs and transcripts, or before you run out and sign up for basket weaving, read on - there are some prerequisites.

First, the approval of local management must be secured before enrollment. See your

department manager. Also, the course you intend to take must be offered outside your normal working hours. AND, you must pass the course before you can be reimbursed.

Chassis Dynamometer Max hp @ 2500 rpm (60 mph)

Assuming all of these prerequisites are achieved, what kinds of courses qualify for reimbursement? Reimbursement is made for courses related to your present or potential company assignments. Or, for those courses which lead to a degree in an area related to such assignments.

Are you planning to take a job related course in the near future? Check with your supervisor - you may qualify for reimbursement. If you have any other questions on Shell's Educational Reimbursement Program, contact Fran Bulawa in Employee Relations. His plant phone is 659.

IN REMEMBRANCE

HENRY G. TENNIKAIT, March 8. Mr. Tennikait was a pipefitter helper 1st before retiring in 1955. He was 77.

CRAWFORD E. PROVOW, March 21. Mr. Provow was a pipefitter 1st before retiring in 1956. He was 77.

ALBERT HENRY MER-SINGER, March 24. Mr. Mersinger was a janitor 2nd before retiring in 1963. He was 73.

HARRY B. STUBBS, March 25. Mr. Stubbs was a field machinist 1st before retiring in 1966. He was 62.

HARRY GEORGE HANSON, March 27. Mr. Hanson was a shift foreman in Treating-Effluent Control before retiring in 1963. He was 71.

OʻKELLIE SUMMERS, March 29. Mr. Summers was a pipefitter helper 1st before retiring in 1956. He was 76.

GROVER JUNIOR KIN-NIKIN, March 31. Mr. Kinnikin was a foreman in Engineering Field and had been at Wood River since 1938. He was 55

E D W A R D F R A N K L I N McNELY, April 2. Mr. McNely was an inspector in Engineering Services before retiring in 1962. He was 69.

JAMES WILLIAM ELLEDGE, April 5. Mr. Elledge was a pipefitter 1st before retiring in 1962. He was 75.

STEPHEN LEE OWSLEY, April 6. Mr. Owsley was a shift foreman in Gas before retiring in September, 1973. He was 63.

CHARLES B. STARNES, April 9. Mr. Starnes was a railroad track repairman before retiring in 1959. He was 72.

Easter Egg Hunt

Bright sunshine and bright young smiles were the order of the day Saturday, April 6, at Kendall Hill. It was the annual SRA Easter Egg Hunt, and many hours of preparation and anticipation were over in scant seconds as Shell-kids blitzed the picnic area in search of Easter goodies.

Any well run event takes a lot of cooperation and hard work in the background. Lest we who enjoyed the outing forget, our thanks go out to Ben Bevfoden, chairman of the event, and his family and his other able helpers: Theresa Beiermann, Barb Black, Louis Bleier, Max Clark, Les Crull, Gini Jones, Joe Lanzerotte and his wife Kay, Judy Sasek, Marg Stroud, Ray Thrasher and his wife Ruth, and Weldon Tucker.



TEARS. An empty basket is no fun at an Easter Egg Hunt. Michele Wion, daughter of Mike Wion, engineer in Lubricants



SMILES replace tears as Michele finds ... and eats ... plenty of candy. With Michele is Kimberly Horn, daughter of Brian Horn, senior engineer in Tech.



THEY'RE OFF in a blaze of speed in search of Easter goodies. Good weather and lots of happy kids blessed the occasion.



'BATTEN THE HATCHES'. Boilermaker Joe Strayhorn and boilermaker helper Gary Arth prepare a CO-5 exchanger for a tubular test.

Cat Cracker Shutdown

After an uninterrupted run of three years, Cat Cracker No. 2 is down for scheduled maintenance.

As in any big shutdown there was much to be preplanned, and much to be accomplished during the down time. It is scheduled to be brought up in mid-May, but not until after many hours of effort have been given by a wide variety of refinery personnel.

On this page are only a few examples of the people involved and the work being done.



HEAVY ASSIGNMENT. On page one you saw Frank Stringer with the question "What's going on here?" Here's what. Specialized equipment is lowered to the underground cooling water line for the Cat Crackers. Without cutting service to the line, this equipment extracts a piece of the pipe and installs a stopple valve so repairs and modifications to the line can be made without shutting down the other Cat Cracker. Shown from left is the pipefitter team assigned the difficult task of hooking up this equipment: Charlie Modrovsky, foreman, Frank Stringer (partially hidden), Erwin Seiler, Blackie Dickinson and Don Triplo.



MOUNTAINS OF PAPER. Documenting the status and needs of a large shutdown such as the Cat Cracker requires a great deal of clerical assistance. Although she claims she could use both her typewriters at once, Light Oil Processing secretary Minnie Tindall is shown pounding only one as she types work lists.



TEST FOR PERFECTION. Frank Pinkas, Engineering Services inspector, gives the OK to a weld made by boilermaker Don Carpenter.



UP TO DATE. Denzil Dyer, engineering shutdown coordinator, works on the daily status reports. These reports help tell not only what has been accomplished but also what needs to be done in the days ahead.



PROCESSING CONTINUES. Although Cat Cracker No. 2 is shut down, No. 1 keeps going. Sam Rice, operator 1st, performs "business as usual" as he takes operating data from the board.



CLASSROOM PREPARATION beforehand plays an important part in a smooth shutdown. Doc Bryant, operations foreman, (standing) conducted two week-long shutdown reviews for operations personnel. One group consisted of (from left): Bob Murray, Bud Ridder, Jim Hale, Carl Bailey, Charlie Mellor and Ab Coalson



MAN-SIZED VALVE, Ron Banducci, Cat Cracking process manager, and Jim Becker, operations shutdown coordinator, inspect a huge slide valve to be installed during the shutdown.



CAREFUL CHECK. Machinists Tony Morris (left) and Arnie Henke caliper mechanical equipment at the Wet Gas Compressor No. 2.



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Bill Gibson, editor

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