

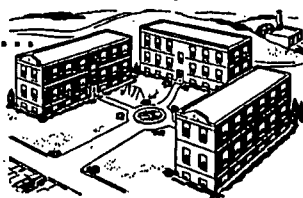


CORAVOL CASE HISTORY NO. 1

1st in a series
describing
CORAVOL
results in
steam systems

Type of Operation...

HOUSING PROJECT



OPERATING CONDITIONS: Winter months—Average per month.

Evaporation — 8,098,000 lbs.

Make-up — 34,103 gal.

Degree days — 1,296

PROBLEM: Corrosion in steam and return lines. Pitting of receiving tanks. Rust deposits interfered with operation of traps and vacuum pumps.

CORAVOL STARTED: September 1939.

RESULTS: Corrosion stopped. No further deterioration of lines and receiving tank. Traps operate perfectly. All rust deposits removed.

USER COMMENTS:

"Pipe pounding and heating complaints have been eliminated. The receiving tank has not been blown down for over a year and the water in it remains as clear as crystal."

STOP STEAM SYSTEM CORROSION

with CORAVOL (the original* AMINE PROCESS)

CORAVOL IS PART OF A COMPLETE TECHNICAL SERVICE which provides special formulas of treatment for: boiler feed water... hot water supply... refrigerating brine... cooling and condenser water... rapid scale removal... coagulation... algae control... fuel oil supply.

CORAVOL in your steam system (1) prevents corrosion in lines, (2) cleans out clogging rust deposits. Thus, CORAVOL protects lines; improves heat transfer; restores original capacity of lines and efficiency of valves and traps.

CORAVOL is not a boiler feed water treatment—it is designed expressly for use in steam systems. Because CORAVOL volatilizes and condenses with the steam, it circulates throughout your entire steam system and protects all zones from corrosive attack.

*The use of CORAVOL in steam systems is covered by U. S. Patent No. 2033024. The Western Chemical Co., owner of this patent, grants licenses under which volatile AMINES purchased from other sources may be used in steam systems upon payment of royalty to Western Chemical Co.

WRITE TODAY for complete free data about the CORAVOL process.

WESTERN CHEMICAL COMPANY

713 Washington Street

Kansas City 6, Missouri

Bureau of Mines Gives Shale Oil for Research

Under cooperative agreements signed recently with ten large industrial research organizations, Bureau of Mines has agreed to supply limited quantities of oil shale and shale oil for tests and experimentation in exchange for information on the results obtained. Director James Boyd announced. Materials covered in the agreements, now totaling about 1250 tons of shale and 320 barrels of oil, are being shipped from the Bureau's mines and demonstration plant on naval oil-shale reserves near Rifle, Colo.

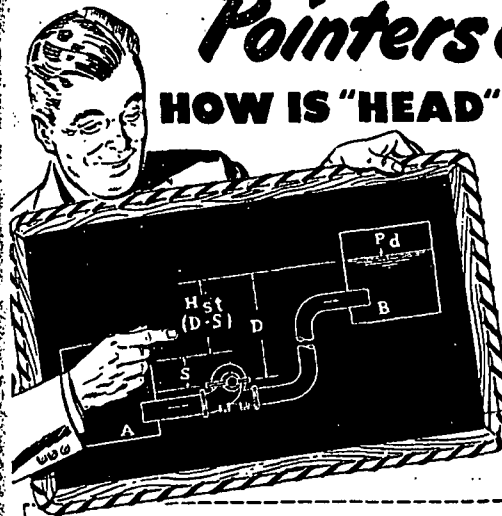
Cooperating companies and institutions, Boyd said, are Sinclair Refining Co., New York, N. Y.; Standard Oil Development Co., New York, N. Y.; Union Oil Co. of Calif., Los Angeles, Calif.; Socony-Vacuum Oil Co., Paulsboro, N. J.; Shell Development Co., San Francisco, Calif.; Phillips Petroleum Co., Bartlesville, Okla.; General American and Film Corp., New York, N. Y.; Montana State College, Bozeman, Mont.; Gulf Research and Development Co., Pittsburgh, Pa.; and Godfrey L. Cabot, Inc., Boston, Mass.

Each of the ten organizations has requested samples of shale oil for refining and other tests on conversion of the crude oil into useful products. In addition, Sinclair Refining Co., Standard Oil Development Co. and Union Oil Co. also are obtaining oil shale for research on development of processes for extraction of the shale oil. Sinclair's work on oil shale will be done at the newly completed laboratory at Harvey, Ill., Standard's at Baton Rouge, La., and Union's at Wilmington, Calif.

Prize awards for best papers on resistance welding topics submitted in the 1947-1948 national contest were announced recently by a special jury of awards of American Welding Society. All prizes were donated to the AWS by Resistance Welder Manufacturers' Assn.

Central Kansas Electric Cooperative Assn plans to install a new 1160-kw diesel generating unit in its Great Bend, Kan., plant. The addition will be financed with part of a \$1,260,000 loan from the Rural Electrification Administration. Great Bend plant already contains two 1000-kw diesel units. The cooperative also has a contract with Kansas Power & Light Co. for supply of 1000 kw of standby energy. It obtained the REA grant on a showing of need for additional power to serve present and prospective consumers on its distribution system.

Trustees of James F. Lincoln Arc Welding Foundation have announced Sept. 15, 1948 to April 1, 1949 as the period for submitting entries in its annual engineering undergraduate award and scholarship program. The current competition is the second in a 10-yr series of programs that offer engineering undergraduates (including agricultural engineers) the opportunity to compete in preparation of papers on various phases of welding for monetary awards as well as scholastic and industry recognition.



NOMENCLATURE OF HEADS NOT SHOWN ON DIAGRAM

h_f = friction head loss in suction line
 h_d = friction head loss in discharge line
 h_t = total friction head loss from A to B
 h_e = entrance loss at A
 h_x = exit loss at B
 P_{vp} = vapor pressure of liquid at pumping temperature

All heads and pressures must be expressed in feet of liquid with proper algebraic sign. Pressures P_a , P_d and P_{vp} can be either in gage or absolute values but, in any case, must all be measured above the same datum.

*Some engineers include these losses in h_t and h_d .

$$\begin{aligned} \text{SUCTION HEAD } h_s &= S - h_f - h_t + P_a \\ \text{DISCHARGE HEAD } h_d &= D + h_d + h_e + P_d \\ \text{TOTAL HEAD } H &= h_d - h_s \\ &= h_d + h_f + h_t + h_e + (P_d - P_a) \\ \text{NPSH} &= S - h_f - h_t + P_a - P_{vp} \end{aligned}$$

(To convert pressures in psi to feet of liquid, multiply by 2.31 and divide by specific gravity of the liquid at pumping temperature.)

WORTHINGTON



THE WORLD'S
BROADEST LINE
ASSURES YOU THE
RIGHT PUMP FOR
EVERY JOB



Worthington's Complete Line

of centrifugal pumps includes all pressures and capacities. For expert advice on any pumping problem—and further details proving there's more worth in Worthington—contact our nearest District Office. Or write to Worthington Pump and Machinery Corporation, Centrifugal Pump Division, Harrison, New Jersey.

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