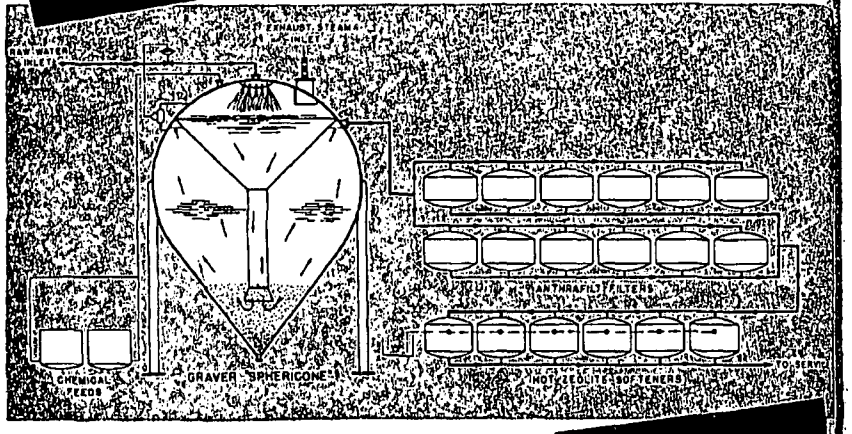
# World's Largest HOT PROCESS- Hot Zeolite Plant




When a large eastern refinery wanted the most modern, efficient and economical treating system to handle 200,000 gph of feedwater ... virtually 90 to 100% make-up ... for their 650 psig boilers, their engineers selected a GRAVER Hot Process-Hot Zeolite plant employing GRAVEX styrene zeolite.

BY GRAVER

## Advantages of this type of Water Conditioning System

This Graver water treatment with hot zeolite was chosen because it offered these advantages over a hot process softener with hot phosphate after-treatment:

1. Lower hardness in feedwater.
2. Lower $CO_2$ in steam because of lower alkalinity.
3. Lower chemical operating costs.
4. Low silica in feedwater.
5. A uniformly low hardness in feedwater with possible rapid variations in raw water composition.

The plant includes a single GRAVER SPHERICONE Hot Process Sedimentation Tank ... also the largest in the world ... to handle the entire water supply. This exclusive tank design gives greatest clarity of effluent, and at the same time provides greatest economy in steel and manufacturing cost. • **Write for further information on the application of this type of GRAVER Water Conditioning System to your own feedwater needs.**

### Facts about the GRAVER equipment in this plant

- One GRAVER SPHERICONE Hot Process unit 43 ft 6 in dia x 60 ft high.
- Six GRAVER Hot Zeolite Softeners, each 10 ft dia x 5 ft 6 in high.
- Twelve GRAVER Anthrafilt Filters, each 11 ft dia x 5 ft high.
- GRAVER Chemical Feeders.

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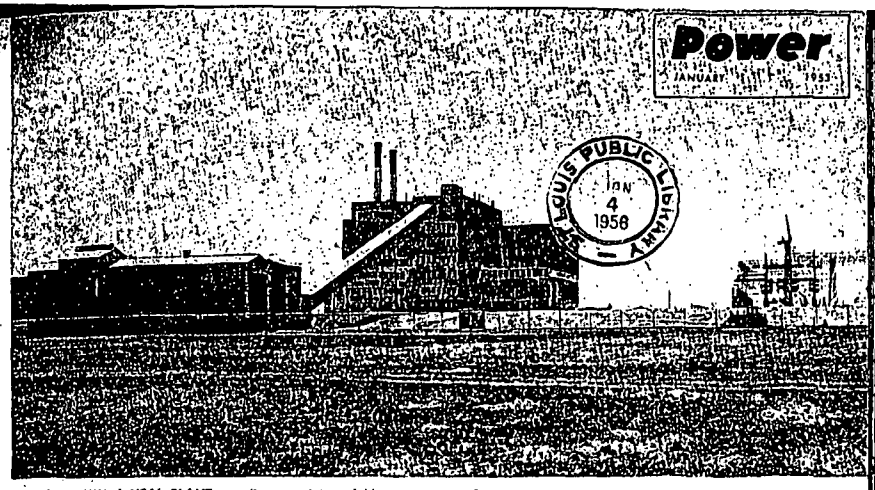
Write for Technical Articles: "Hot Zeolite Softening" and "Factors in Hot Process Softener Design and Operation."

GRAVER **GRAVER WATER CONDITIONING CO.**
*Division of Graver Tank & Mfg. Co., Inc.*
DEPT. P-HP, 216 WEST 14th STREET, NEW YORK 11, N.Y.






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30,000-KW WM J NEAL PLANT standing on plains of North Dakota depends on subsurface water for all cooling and makeup needs. Short haul over private railroad delivers low-cost lignite. All mechanical equipment enclosed against severe climate

**Short-haul lignite delivery, adequate ground water for station makeup, nearness of transmission line route, growing load on three interconnected systems were all considered in choosing site of Wm J Neal Station, Central Power Electric Cooperative, Incorporated, N.D.**



TWO 15,000-KW TURBINES are expected to develop total capability of 45,000 kw during peaks, are cross connected

# Neal Station Burns Pulverized Lignite

By D W DeLAURIER, *General Manager, Central Power Electric Cooperative, Inc* and R. L. HEIN, *Mechanical Engineer, Vern E Alden Co, Consulting Engineers*

► EARLY IN 1950 we realized that the power-generating facilities of North Dakota had to be expanded. The Otter Tail Power Co load was growing and the Bureau of Reclamation wished to develop standby steam for hydro developments on the Missouri River. The eight distribution cooperatives forming the Central Power Electric Cooperative needed a large additional power source in the near future. These three major systems are interconnected.

The Central Electric Cooperative started work on the Wm J Neal Station during May 1950. When dedicated in June 1952, it was the largest lignite-burning plant in northern U.S.A. The station raised North Dakota's generating capacity by one third.

Site and Structure. Neal Station could be considered a mine-mouth plant. After careful study it was placed 30 miles southeast of Minot, North Dakota. An unlimited supply of lignite, over a very short haul on a private railroad achieved a substantial fuel-cost saving. An adequate water supply for cooling-tower makeup was available. In addition the location was convenient to transmission lines. (*Turn page*)