

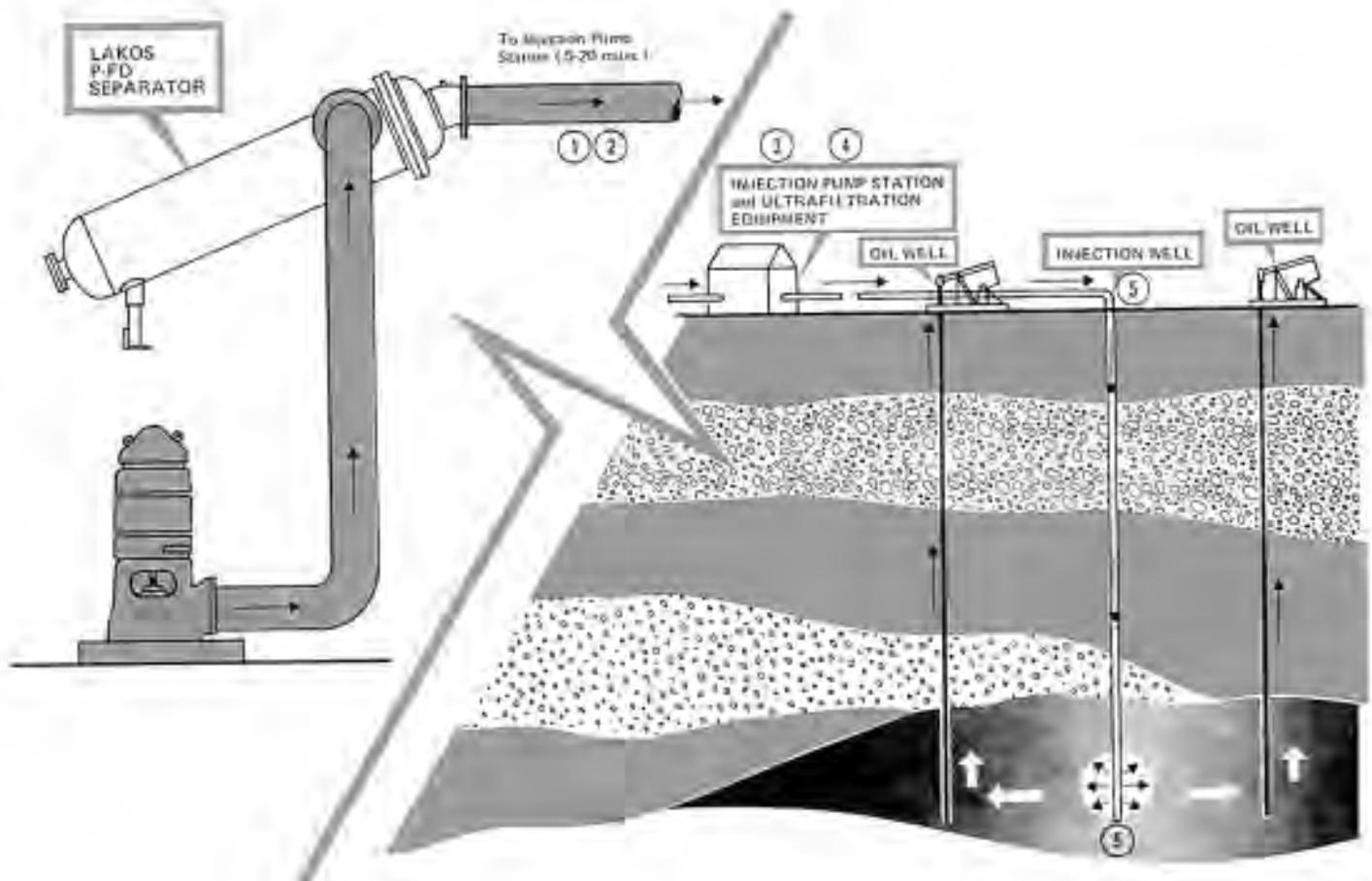
Application Bulletin

Waterflood Injection Wells Maintain Efficiency with LAKOS Separators

Keeping sand out of their injection well systems, Shell Oil Company in Denver City, Texas relies on over 50 Lakos Separators to help reduce repairs and replacements of expensive pumping systems and preserve the necessary porosity and permeability of their underground formations. Since the first installations in 1967, these Lakos Separators have been significantly effective in helping to curb soaring labor and maintenance costs.

As shown in the diagram below, well water is pumped directly to Lakos Industrial Model Separators from turbine pumps at approximately 500 gpm. The separators remove the sand, discharging the water down line to an injection pump station. At each station, ultrafiltration equipment removes extremely fine particles and the high performance injection pumps convert line pressure from 100 to 2,000 psi for injection into the ground. This forced water sweeps the oil deposits toward producing wells for recovery.

continued on reverse



Spokesmen for Shell Oil indicate the Lakos Separators protect their systems at several points:

1. Sand settlement in the pipelines is greatly reduced and good flow characteristics are maintained.
2. System performance is no longer inhibited by sand.
3. The ultrafiltration equipment is protected from plugging and excessive wear.
4. The injection pumps are protected from abrasive wear and expensive repairs and replacements. (Before the Lakos Separators were installed, these pumps sometimes required repairs as often as every two weeks because of sand wear.)
5. The limestone formations below the surface are kept free of sand which otherwise would have clogged the area around the injection wells and severely hampered the injection technique.

Lakos Automatic Purging Systems are installed on most of these Lakos Separators to regularly flush the separators of collected sand and all units are coated with Scotchkote to withstand the years of 24-hours-a-day operation. According to spokesmen for Shell Oil, "We expect to eventually install Lakos Separators on all our fresh water wells in this project. They cured our major sand problems, maintenance now is comparatively nil, and the cost savings are appreciable."



Protected from harsh environmental elements, these Lakos "low-profile" Separators are easily enclosed in small insulated sheds or below-ground cellars.

Others who have used Lakos Separators for similar applications:

AMOCO PRODUCTION Co.; Levelland, TX
TEXACO; Quito, Ecuador
AMINOIL; Monahans, TX
ELK HILL NAVAL RESERVE; Bakersfield, CA

CLAUDE LAVAL CORPORATION

Not connected with The DeLaval Separator Company

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