Citation OIL & GAS CORP.

San Antonio

Natural Gas STAR Conference

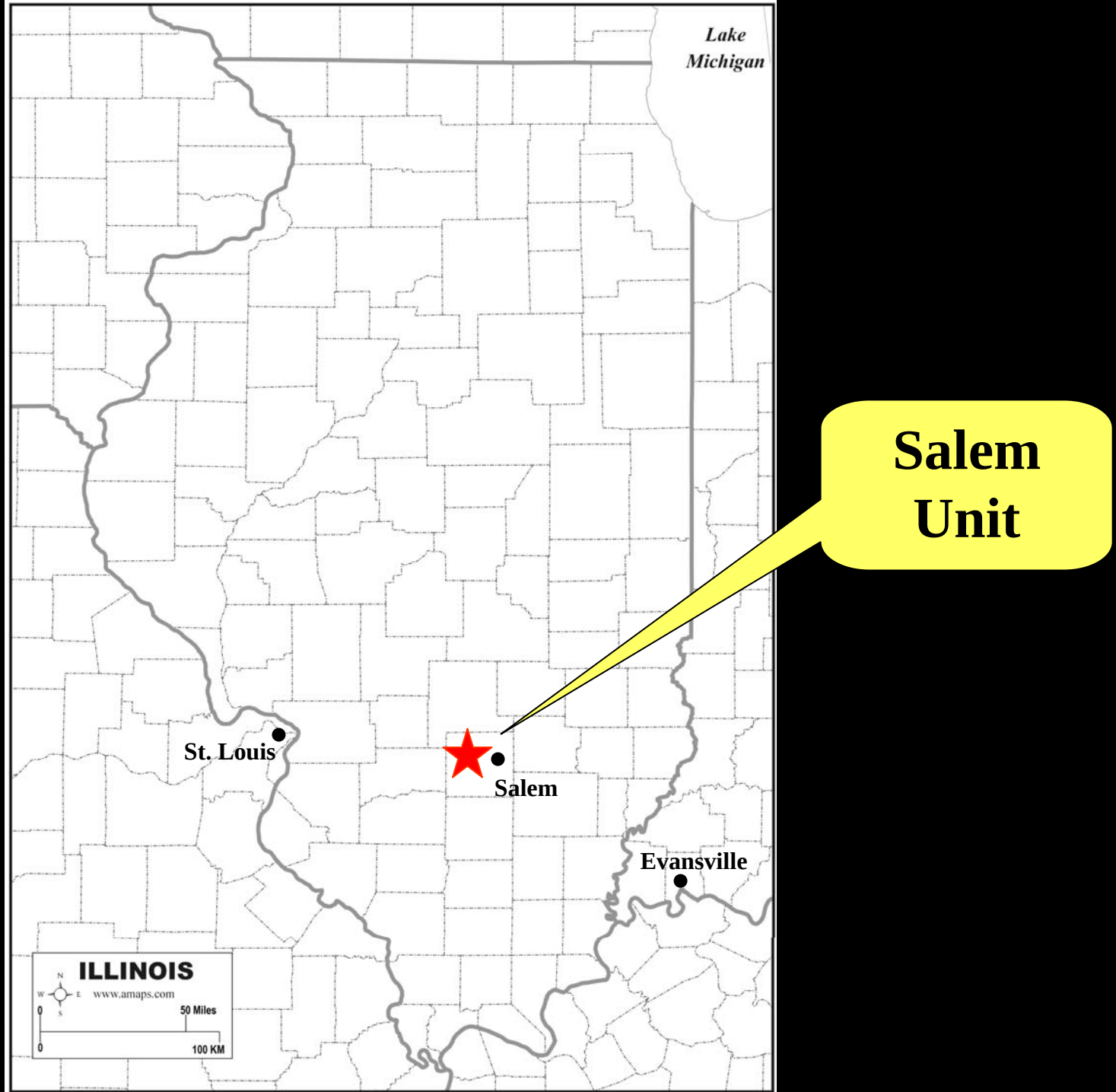
Salem Unit Gas Project

Larry Richards

Hy-Bon Engineering

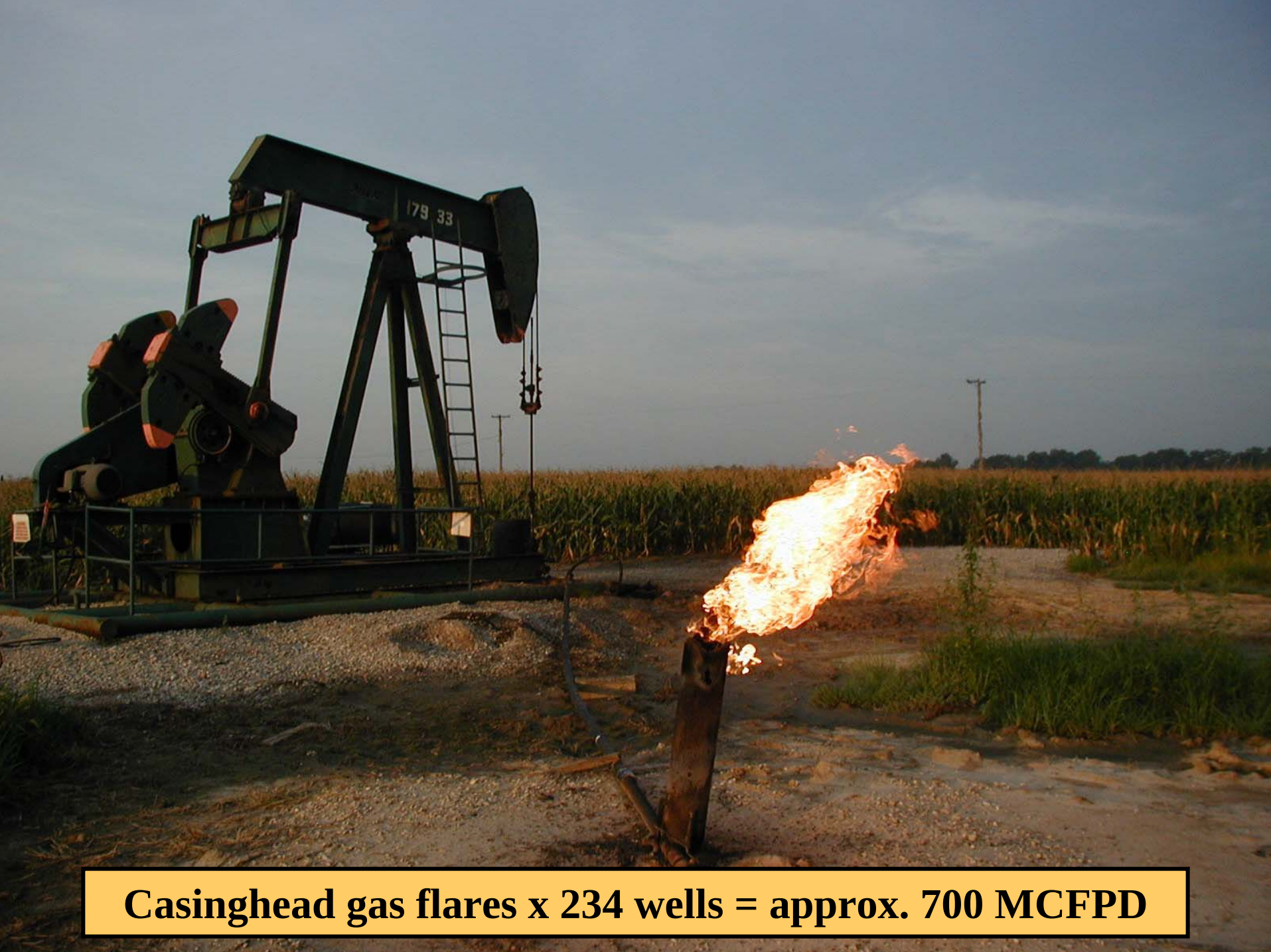
Clyde Finch

Citation Oil & Gas Corp.


Lake
Michigan
Salem
Unit
St. Louis
Salem
Evansville
ILLINOIS
www.amaps.com
50 Miles
100 KM

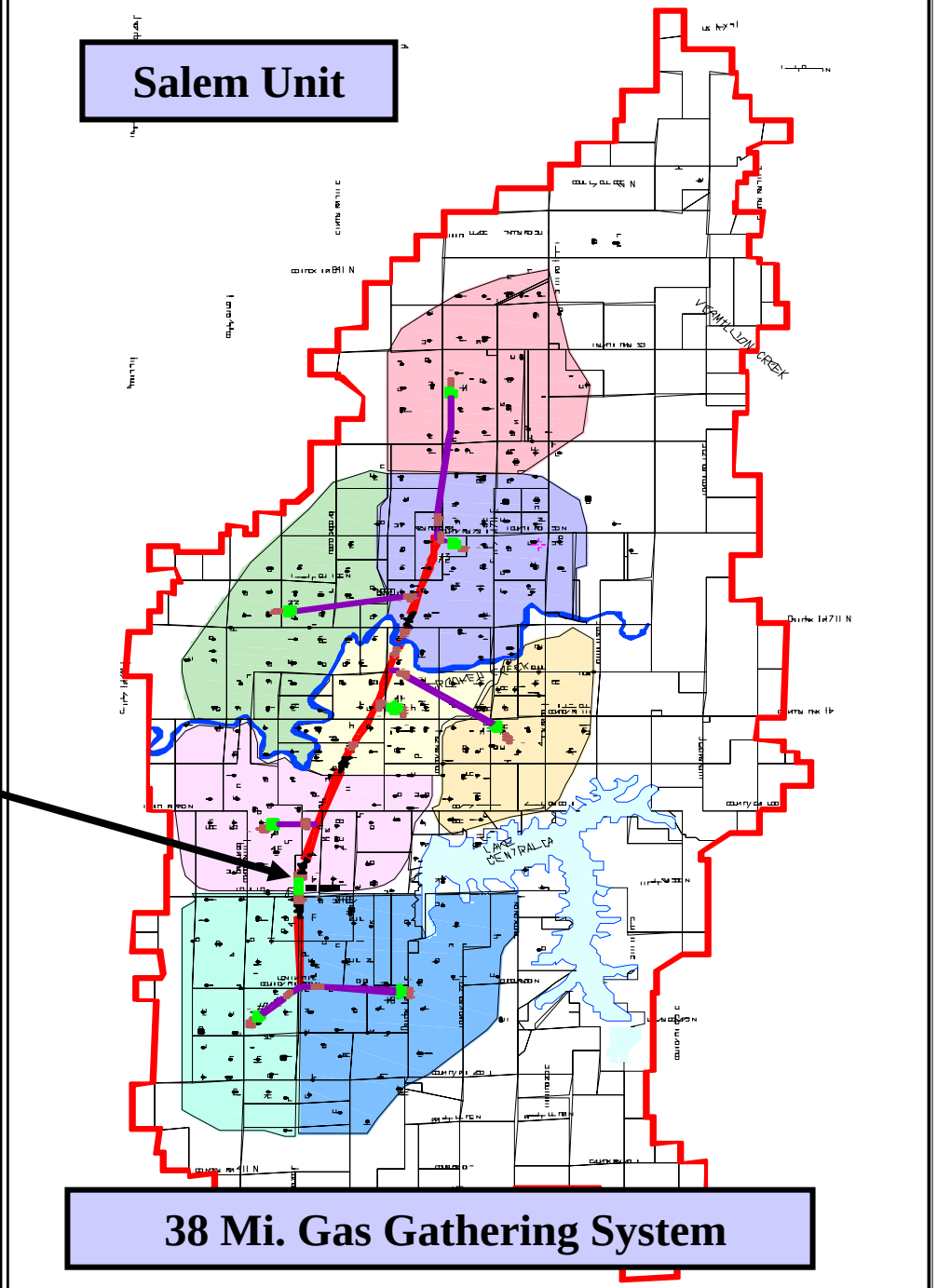
Salem Unit History

- Field discovered 1938
- Unitized in 1950s
- Earliest large waterflood in USA
- Operated by Texaco until 1998
- Produces from 5 zones
- 1,670 BOPD & 90,000 BWPD
- All gas previously flared



Casinghead gas flares x 234 wells = approx. 700 MCFPD

Salem Unit



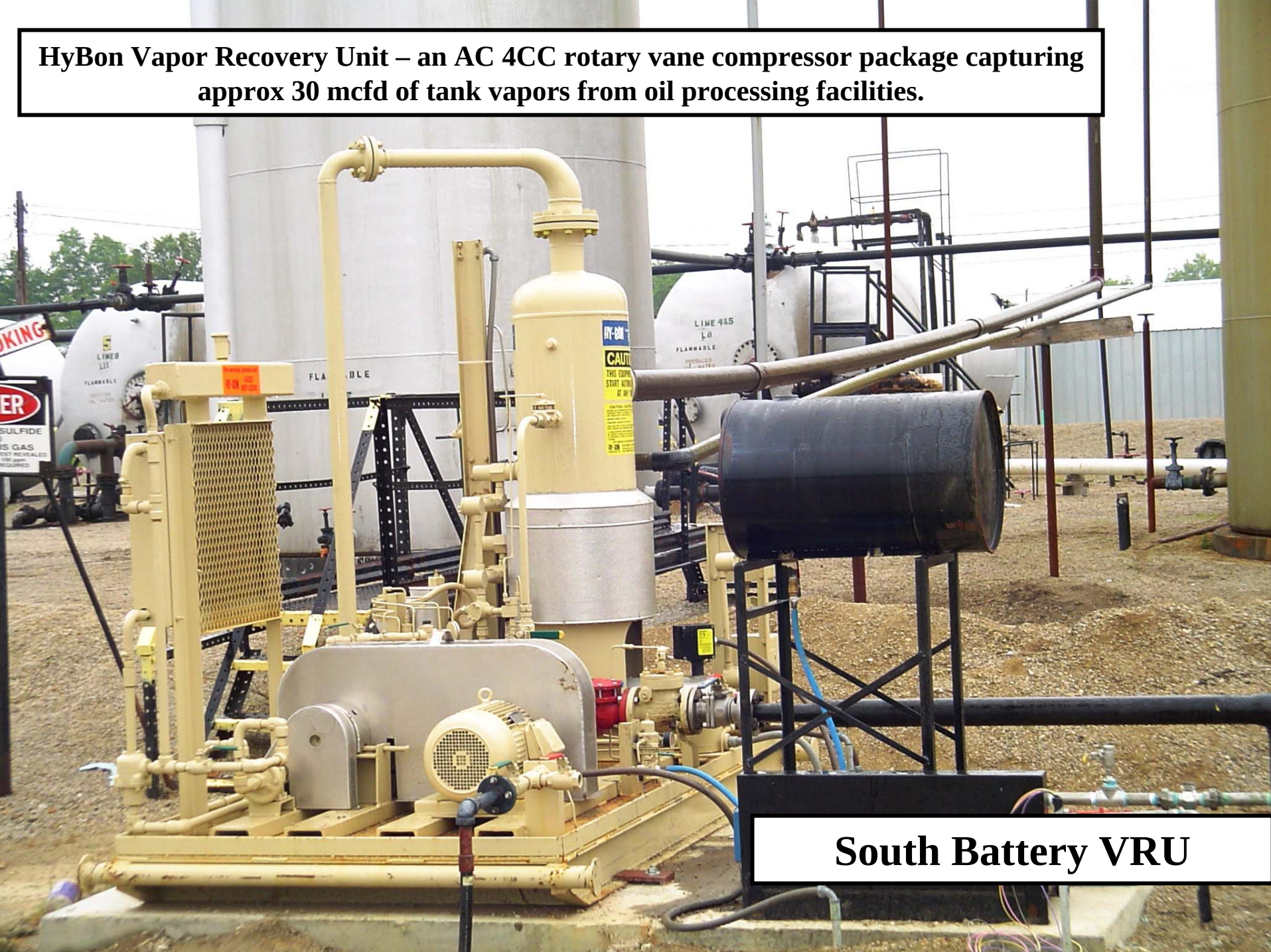
New Gas Plant

38 Mi. Gas Gathering System

Field Compressor Site

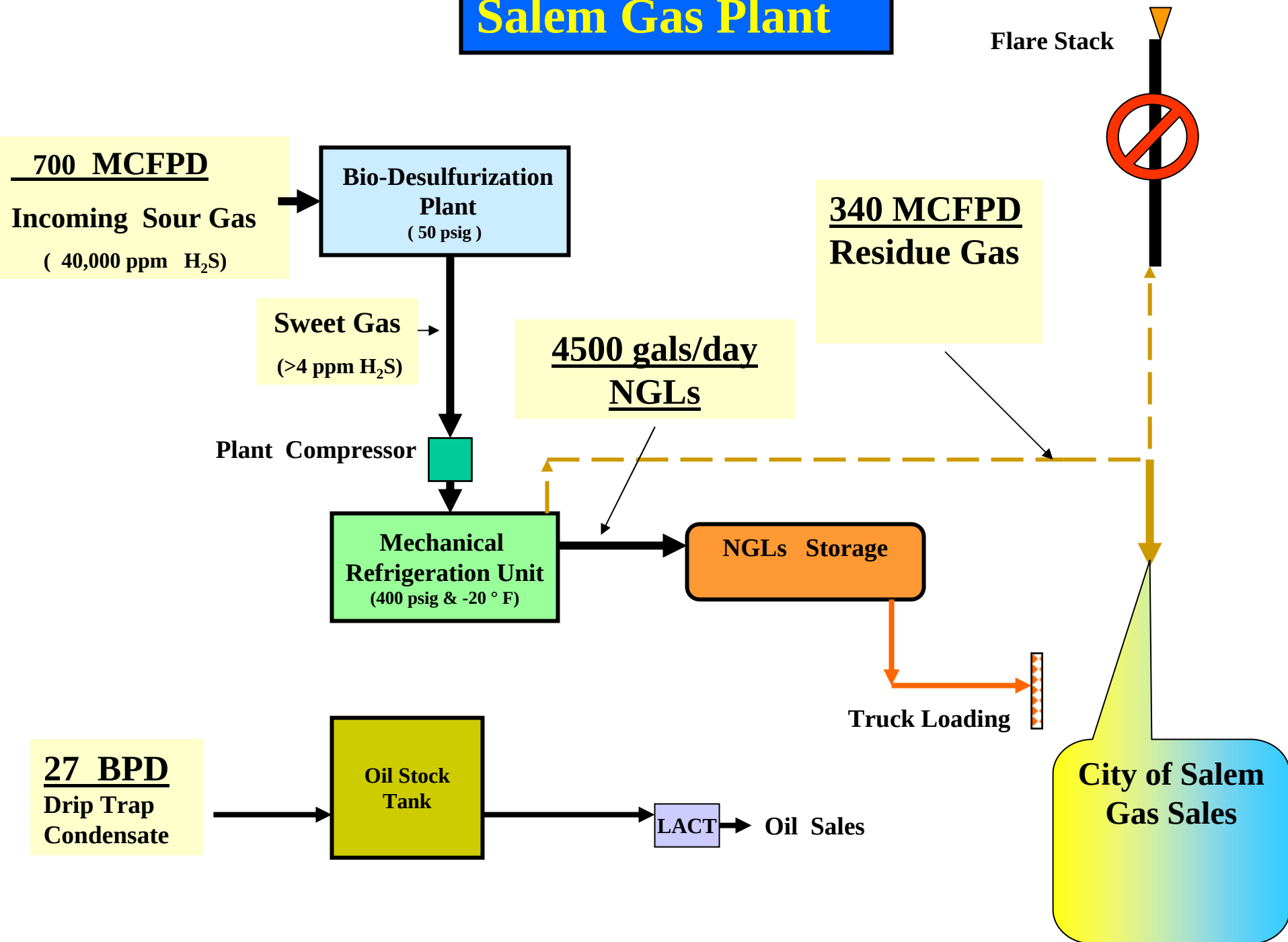
Electric drive used to minimize downtime.

PLC monitoring used to maintain a constant vacuum on the wells..

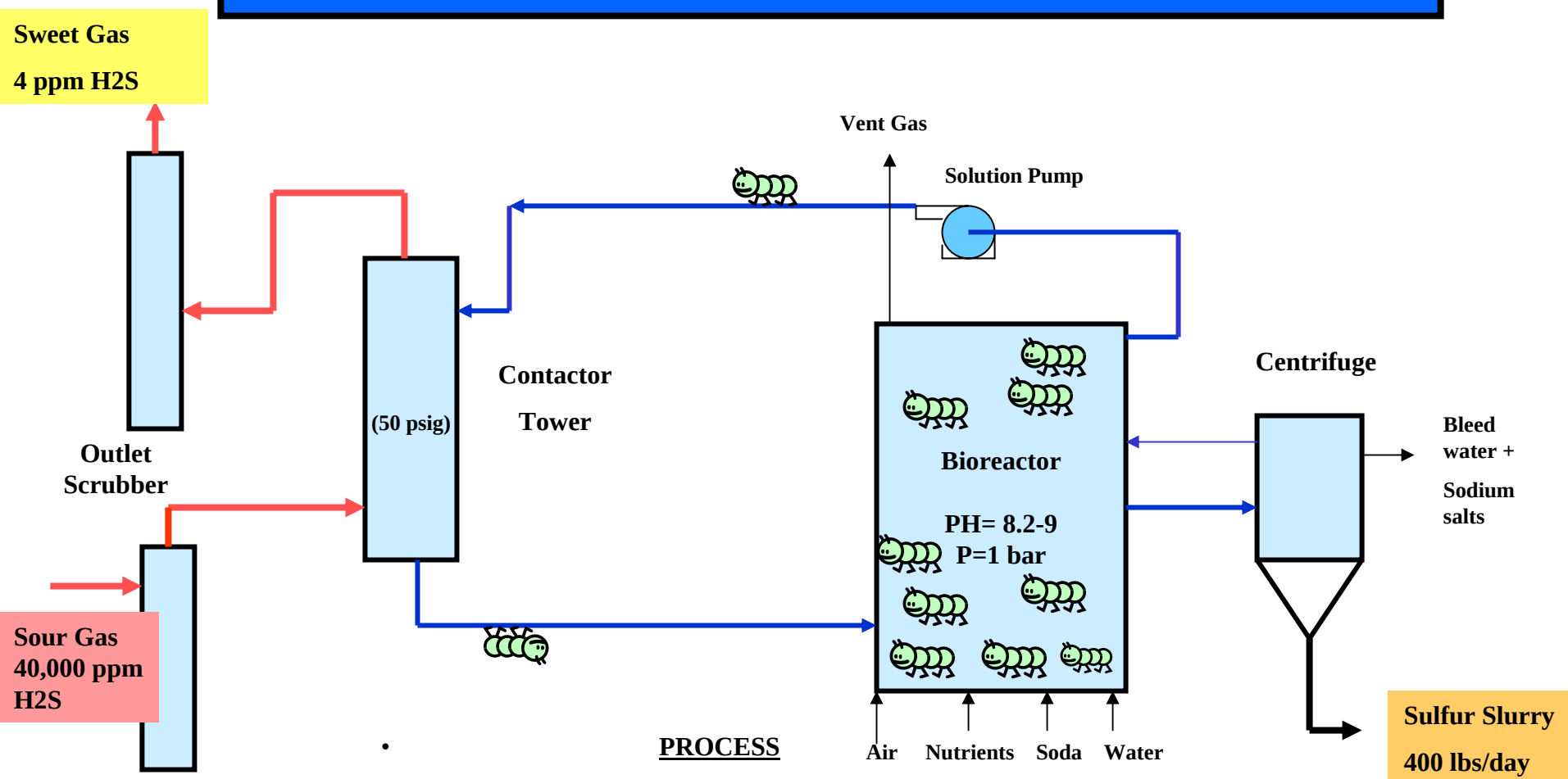

HyBon Vapor Recovery Unit – an AC 4CC rotary vane compressor package capturing approx 30 mcfd of tank vapors from oil processing facilities.
South Battery VRU

North Battery Hybrid VRU

Salem Gas Plant



NATCO Bio-Desulfurization Process



PROCESS

- Sour Gas contacted with an aqueous soda solution in Contactor Tower.
- H2S absorbed by soda. Sweet gas less than 4 ppm H2S
- H2S removed from soda by biological conversion to elemental sulfur, using air in Bioreactor
- Regenerated soda returned to Contactor Tower
- Sulfur disposal required

Thiobacillus excreting sulfur crystals

Optimum Conditions

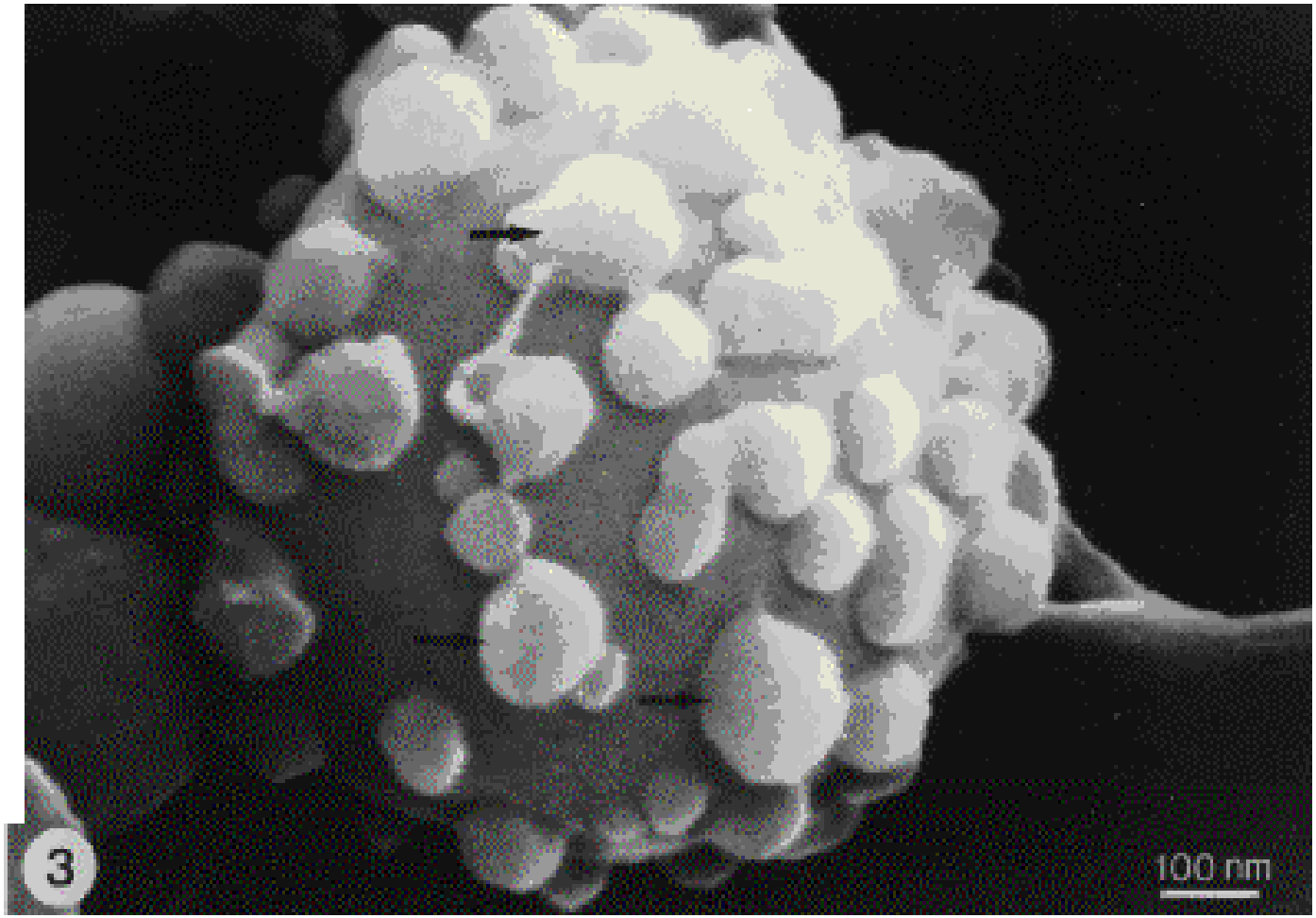
PH : 8

Cond.: 55 mS/cm

Redox: - 365 mV

Temp: 95 deg F

Solids: 5 g/l



555 MMCF Sour Gas Processed

98% Uptime

Bio-Plant


Sulfur

Plant Compressor

Mechanical Refrigeration Unit

To Date

301 Truck Loads

or

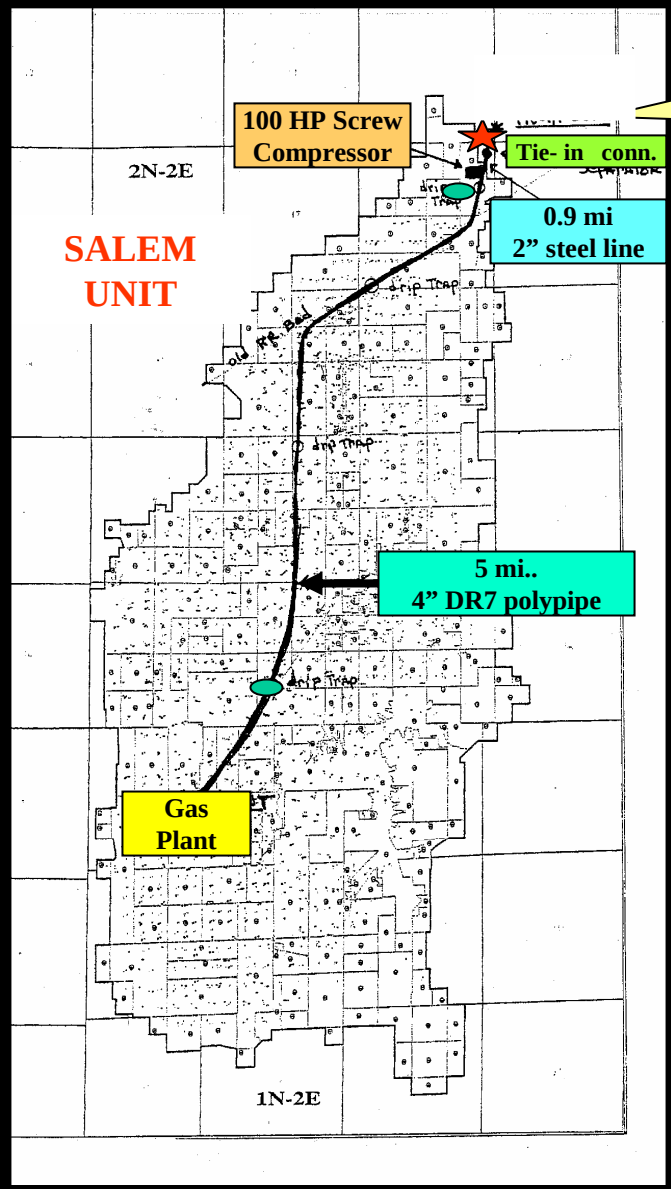
2.7 million gals

(64,300 bbls)


Stranded
340 MCFPD Residue Gas
Plant Flare Stack


Burn Test Demo
for City of Salem

Pipeline provides 25 % of Salem's Annual Gas Use



SALES GAS PIPELINE to CITY of SALEM

Pipeline Compressor


Todate
103 MMCF Sold
Tie-in Connection
City of Salem

Gas Plant & Pipeline Operators


Hy-Bon Service Manager -Bert Griggs
CAUTION
17 10:31 AM

Conclusions

- **Capturing this stranded gas is good business.**
- **Bio-desulfurization works very well (< 4ppm H2S).**
- **Sales gas deal is win/win for Citation & Salem.**
- **Infrastructure now available for more gas and profit (Additional Trenton Zone wells drilled).**
- **1,200 tons/year SO2 eliminated from air @ Salem Unit.**