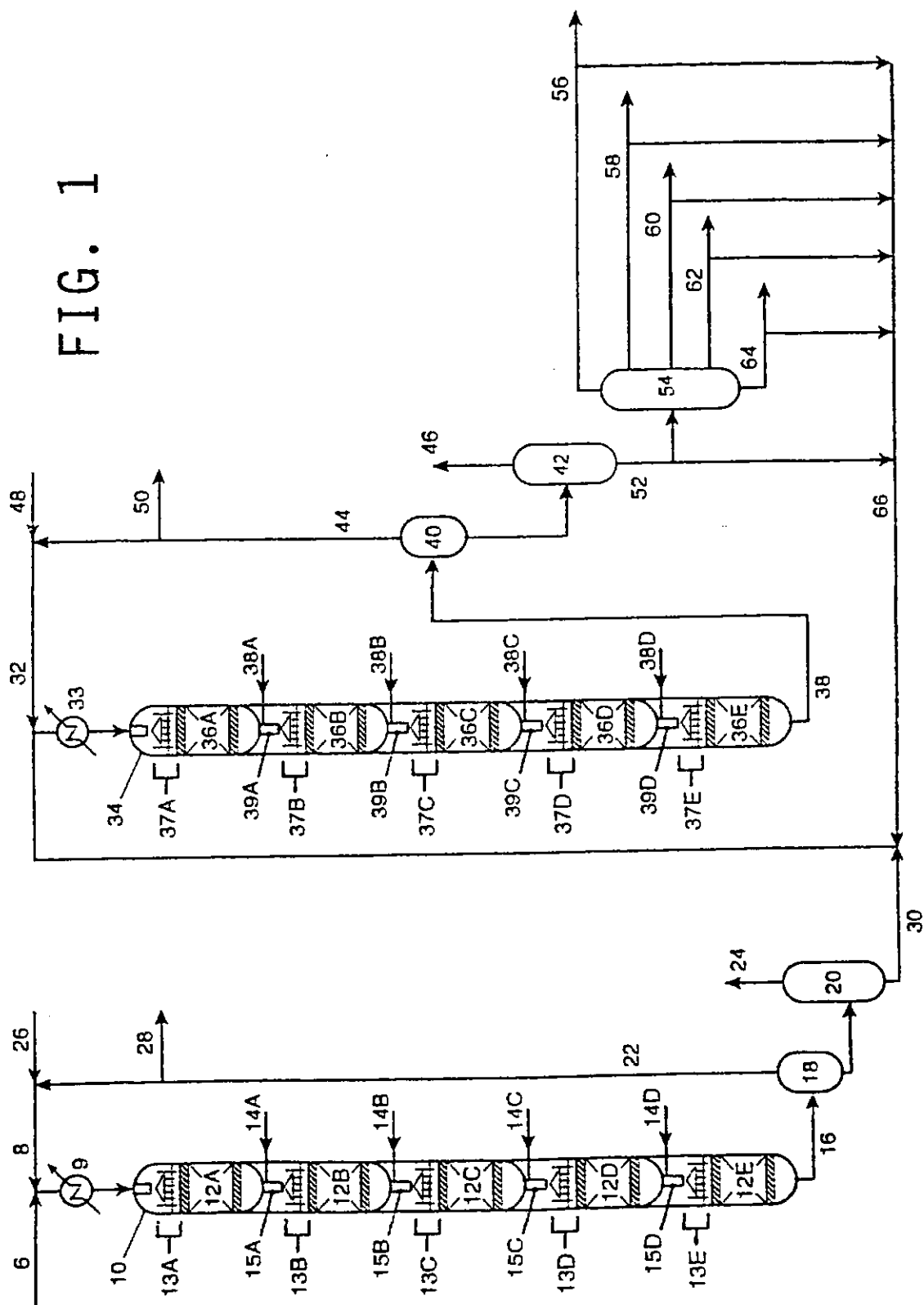


FIG. 1



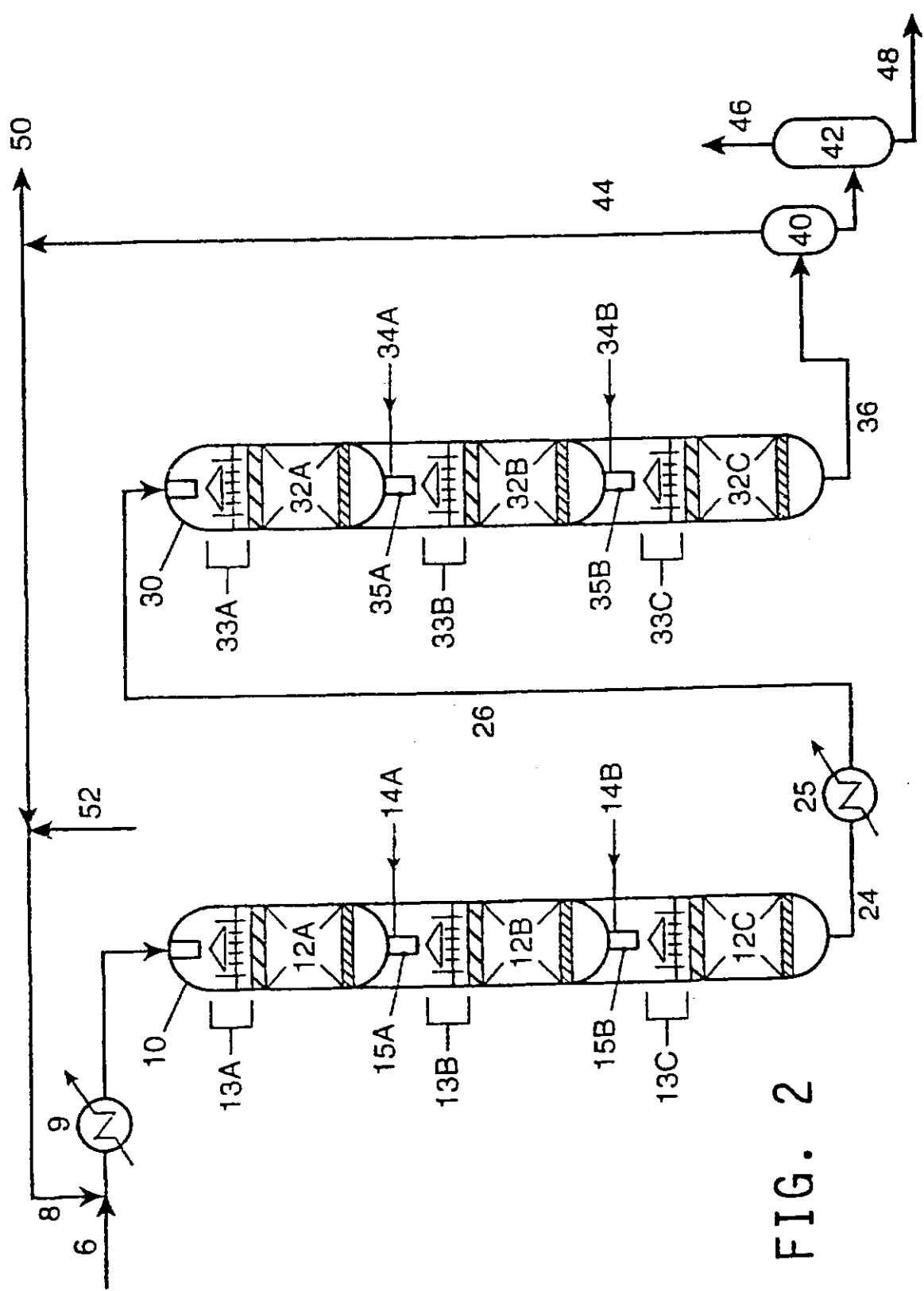
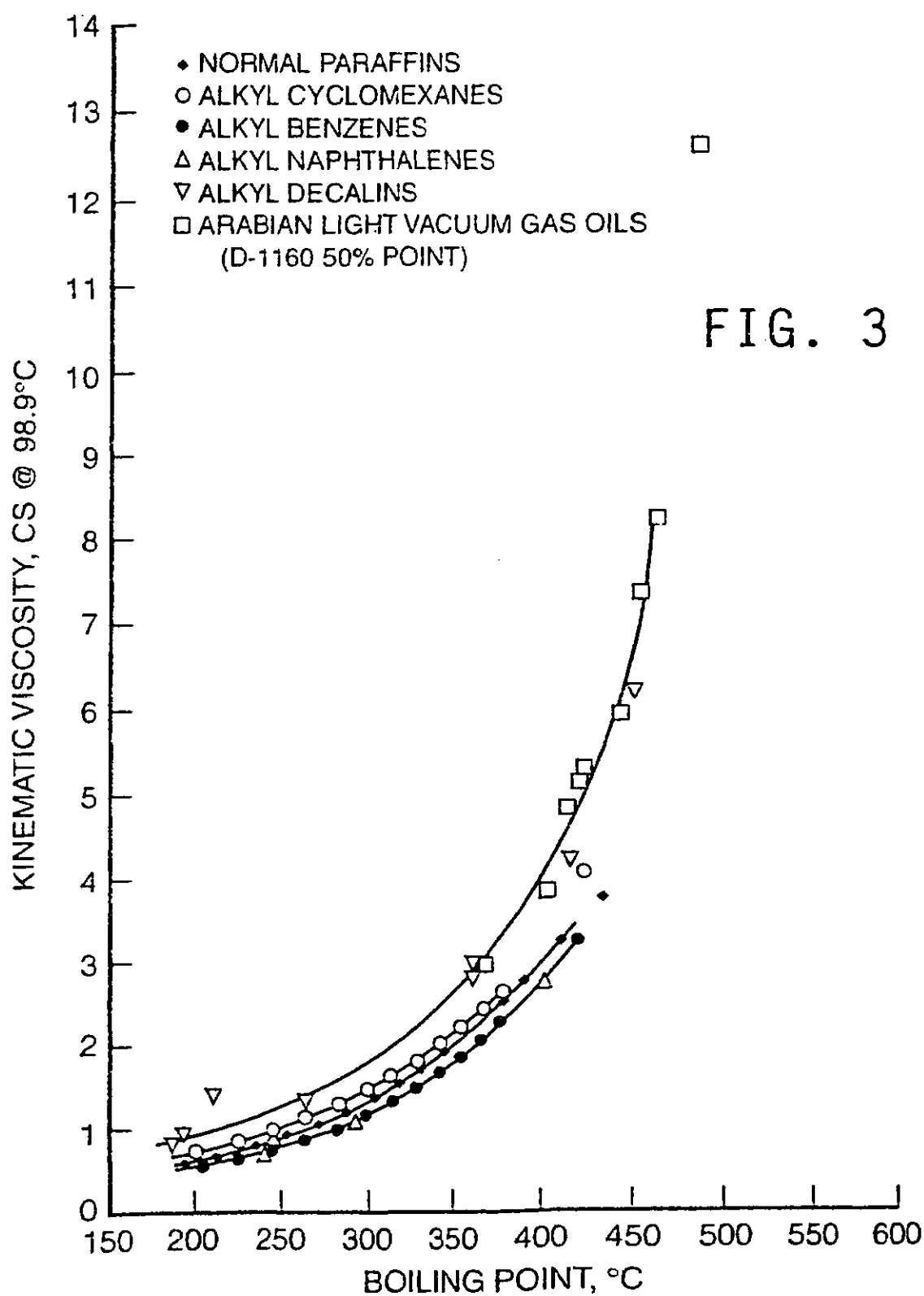


FIG. 2

3/24



4/24

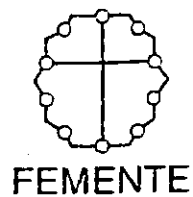
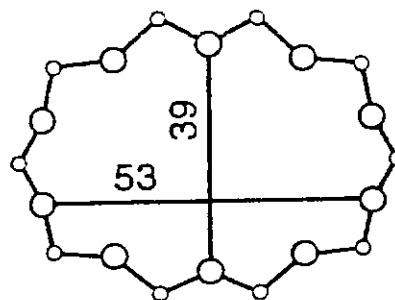
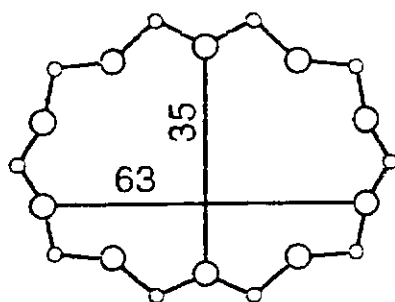
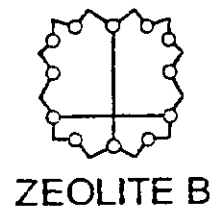
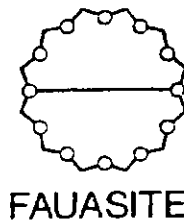
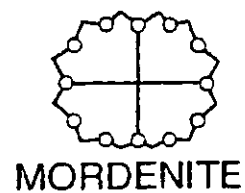
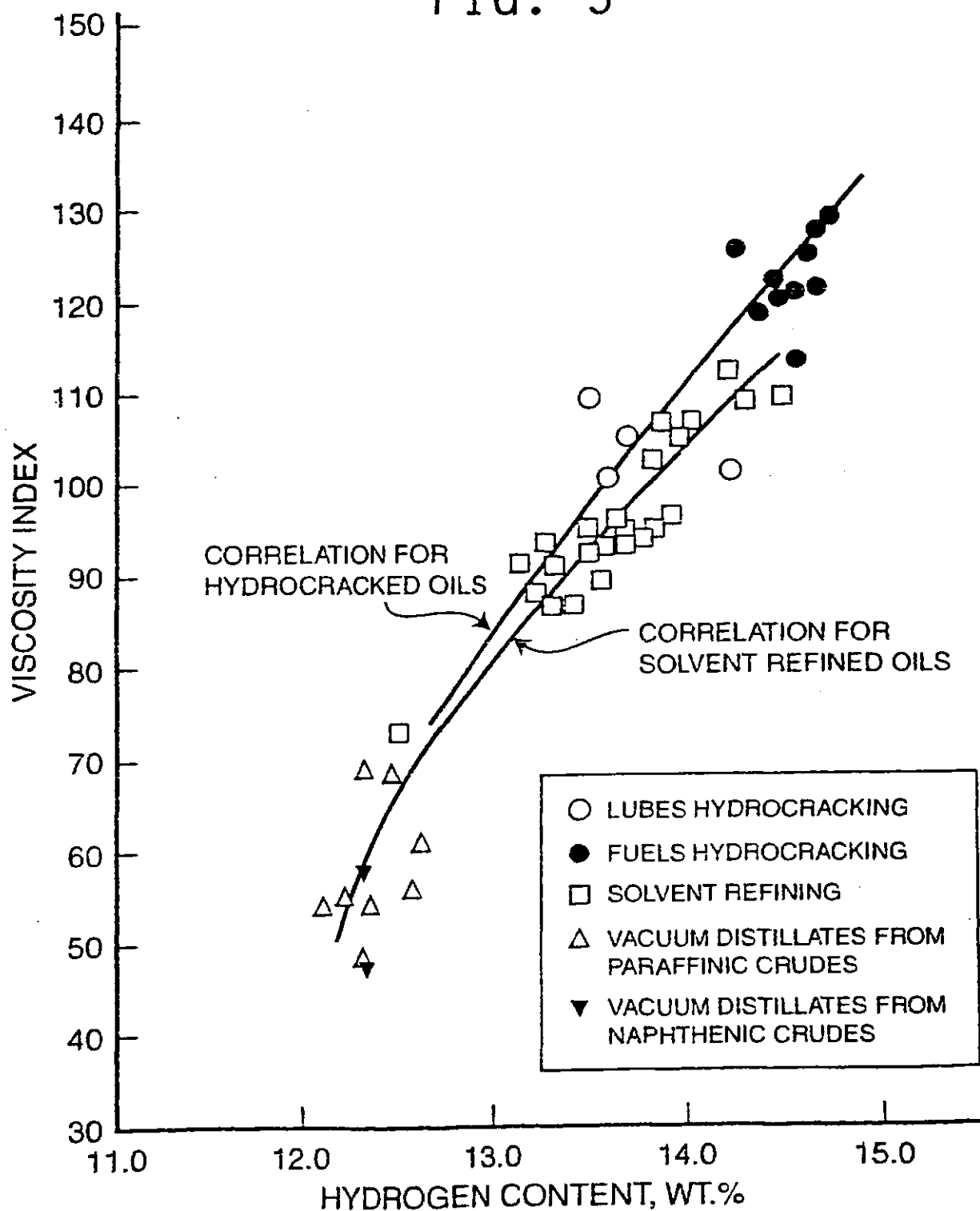
**SMALL PORE
8-RING ZEOLITES****MEDIUM PORE
10-RING ZEOLITES****LARGE PORE
12-RING ZEOLITES**

FIG. 4

5/24

FIG. 5



6/24

FIG. 6A

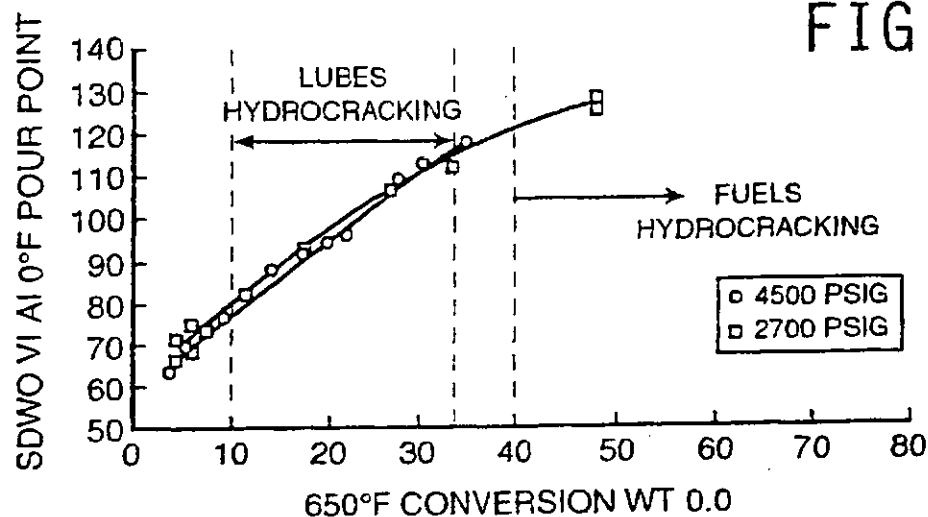


FIG. 6B

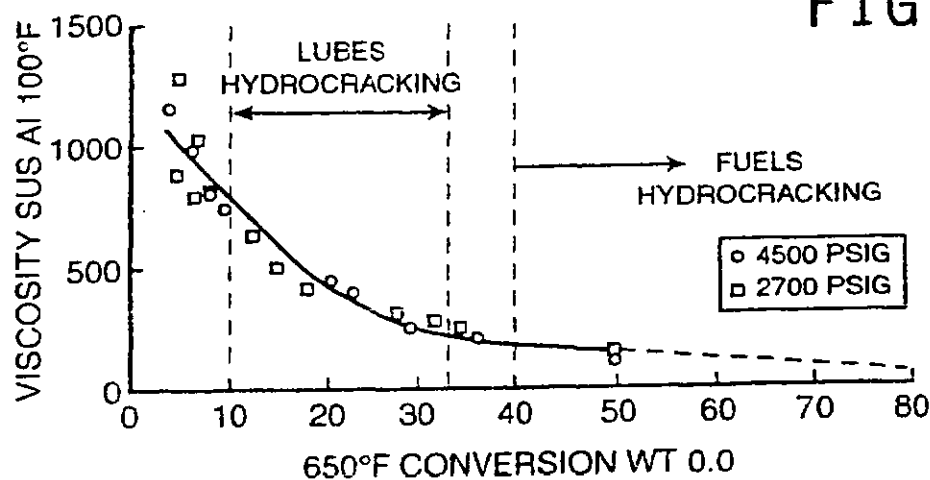
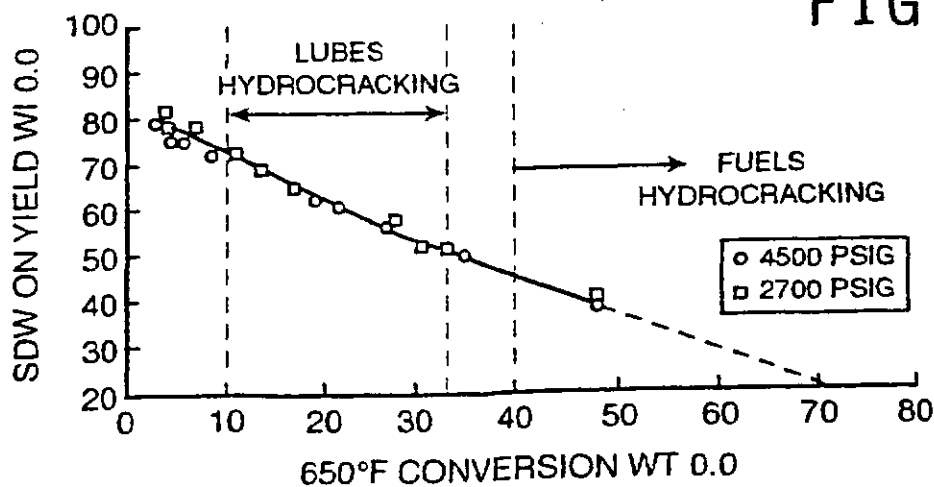


FIG. 6C



7/24

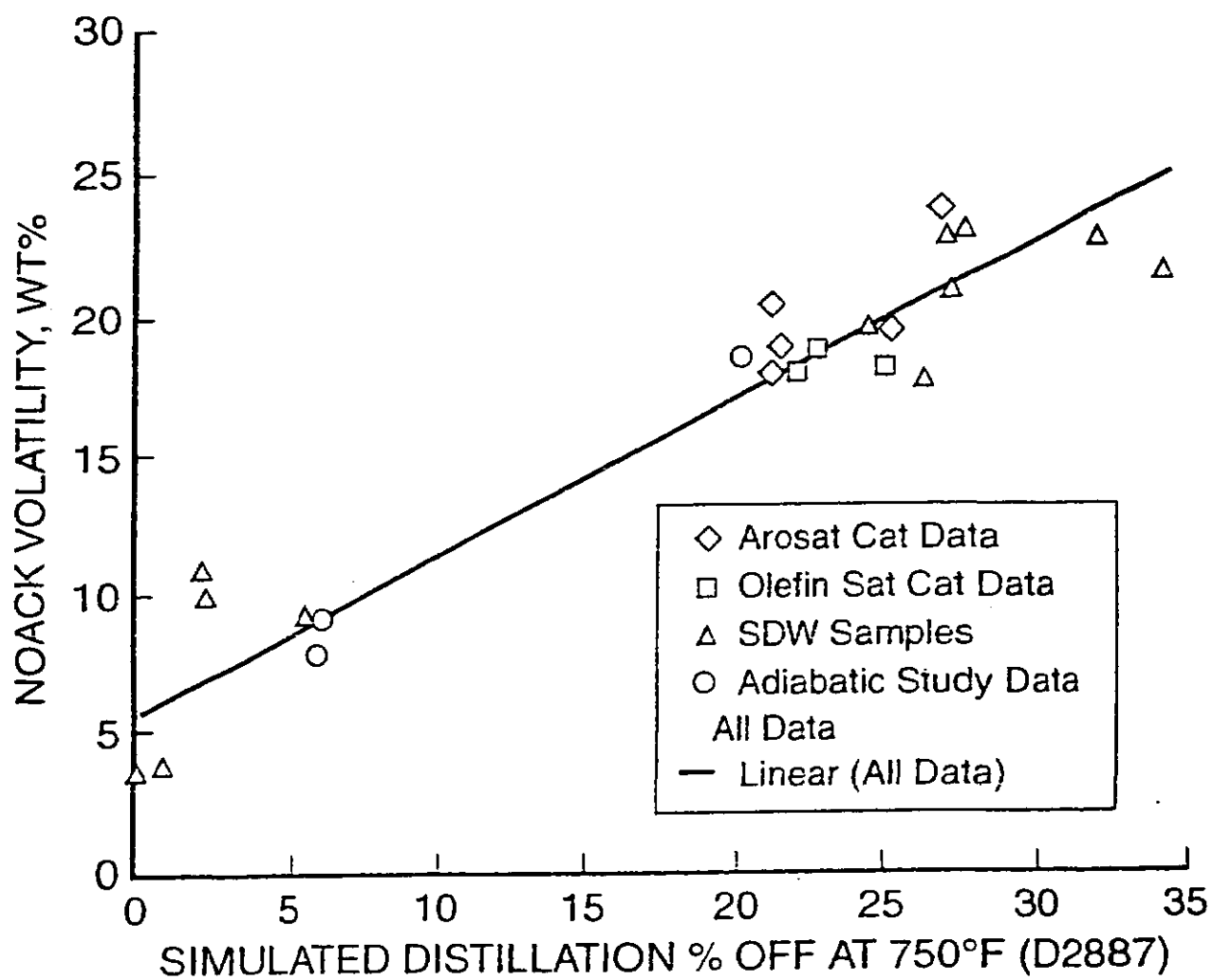


FIG. 7

8/24

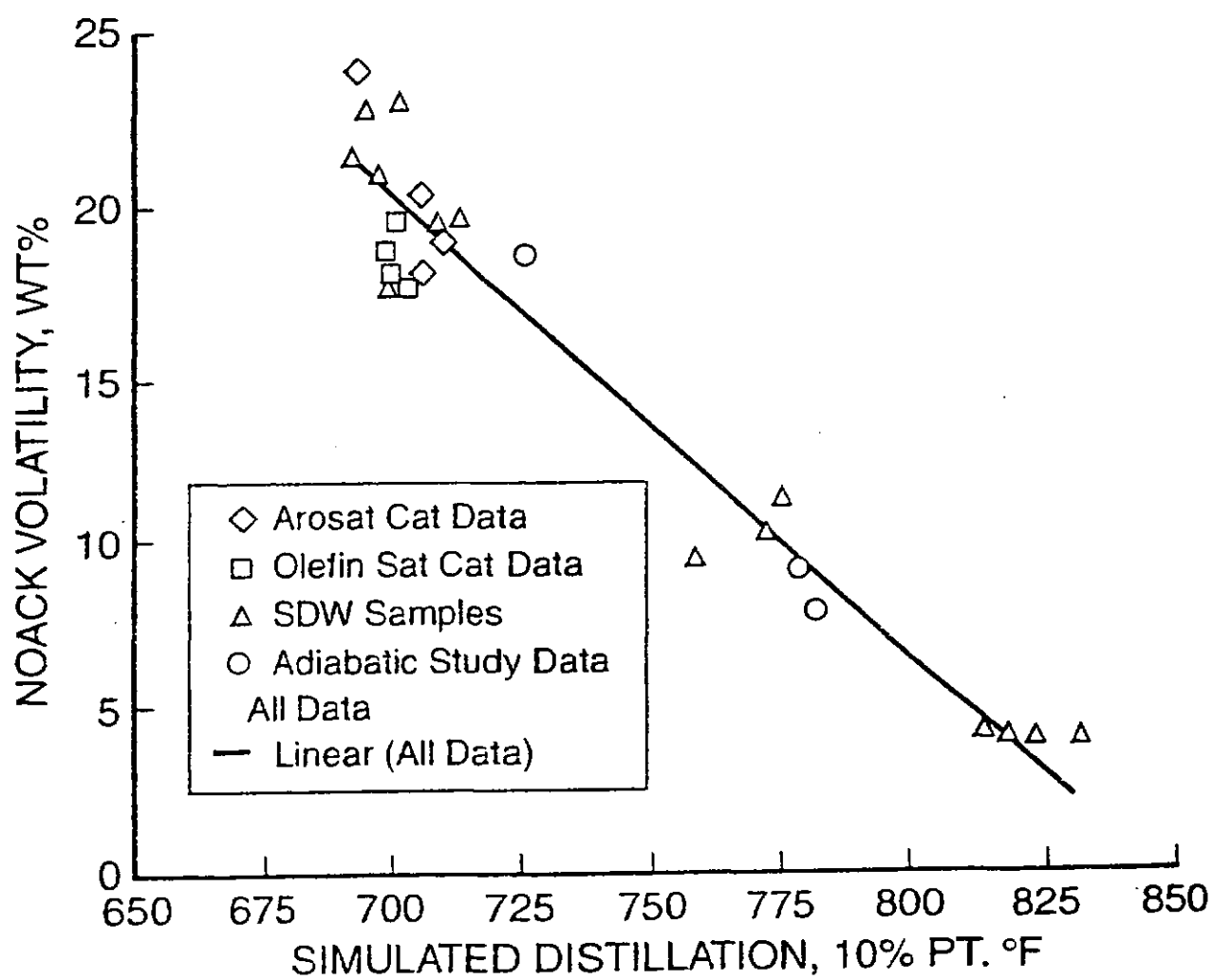
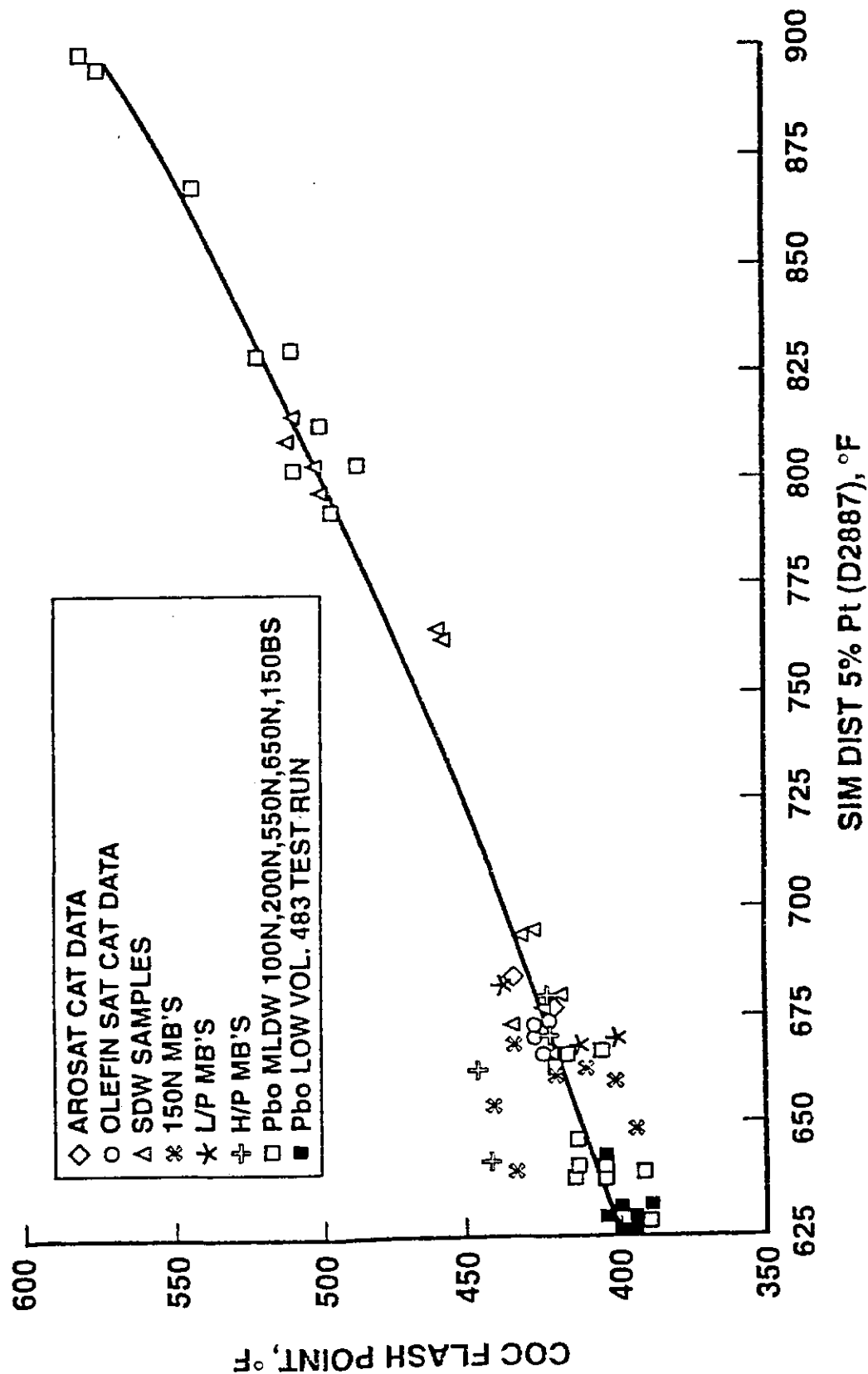


FIG. 8

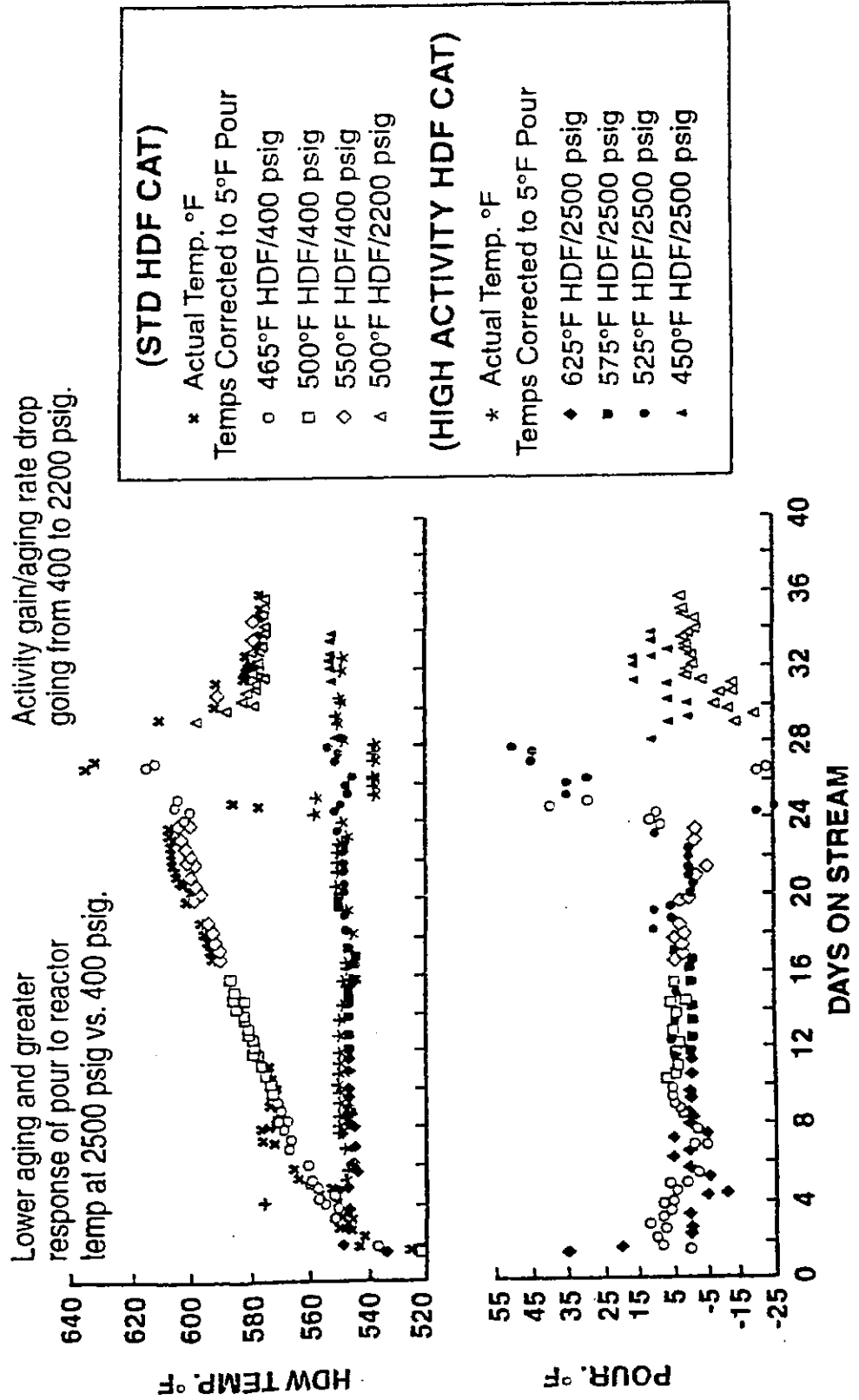
9/24

FIG. 9



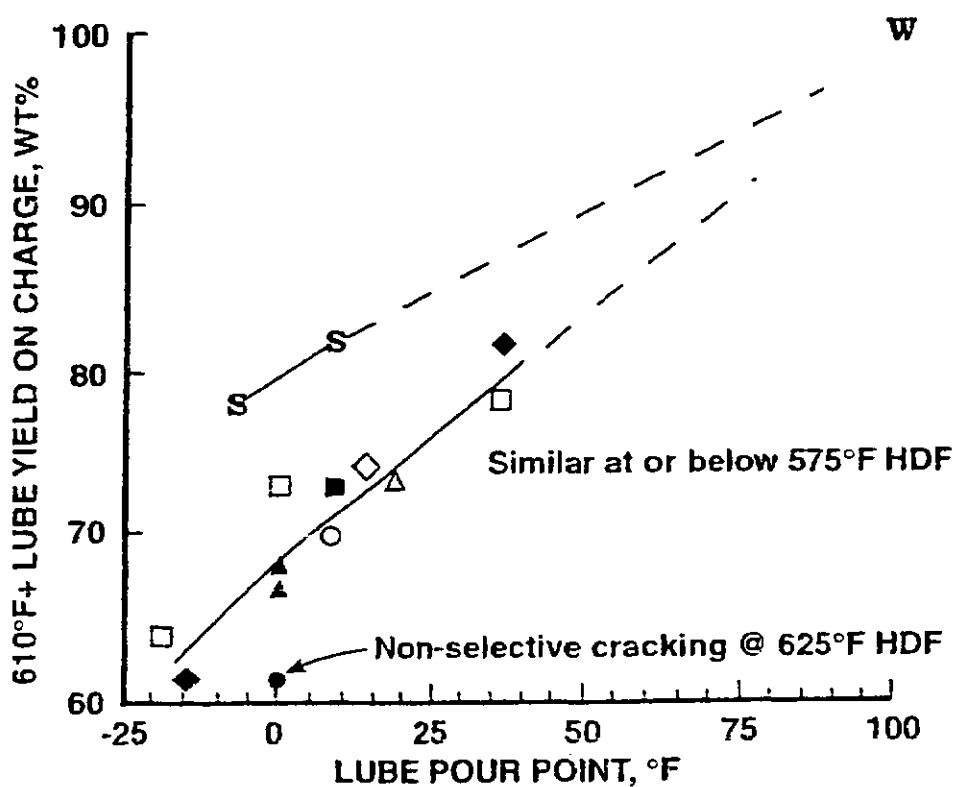
10/24

FIG. 10



11/24

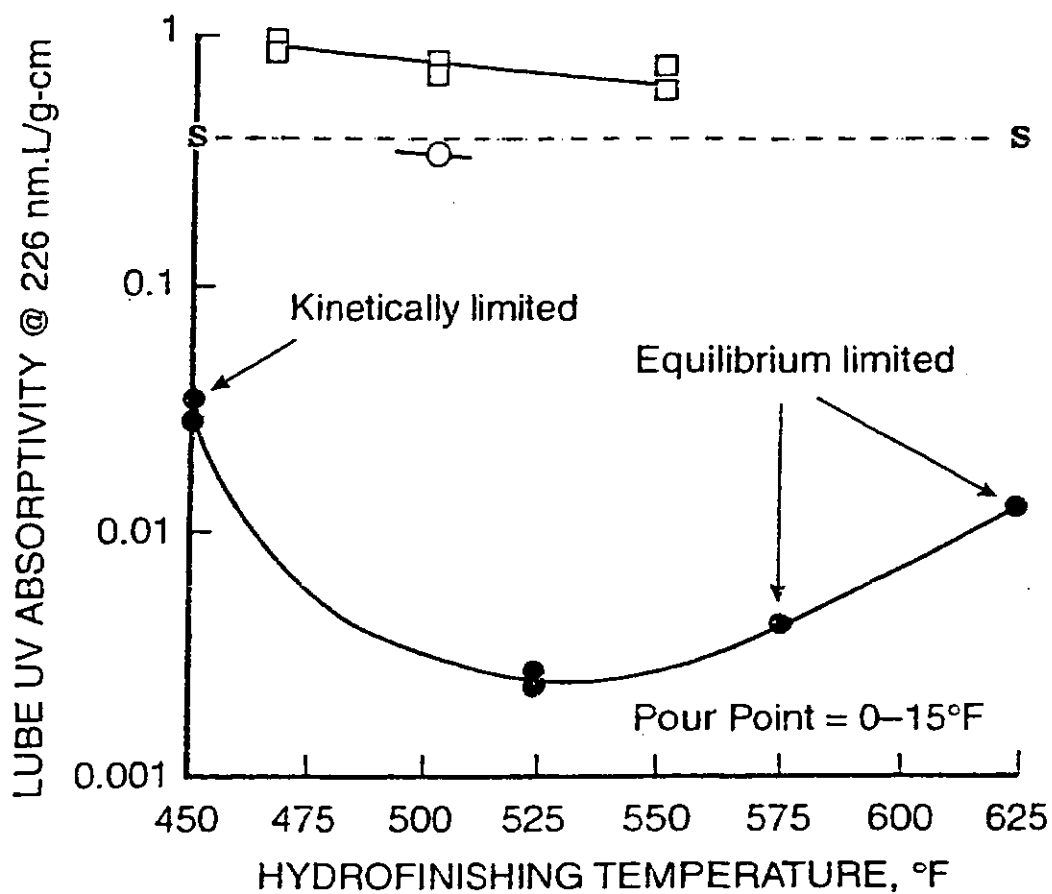
FIG. 11



- | | |
|---|----------------------------------|
| W | WAXY CHARGE |
| S | SOLVENT DEWAXING (dry wax basis) |
| | MLDW: Std HDF Cat @ 400 psig |
| □ | 465°F HDF |
| ◇ | 500°F HDF |
| △ | 550°F HDF |
| | MLDW: Std HDF Cat @ 2200 psig |
| ○ | 500°F HDF |
| | MLDW: Arosat HDF Cat @ 2500 psig |
| ■ | 450°F HDF |
| ◆ | 525°F HDF |
| ▲ | 575°F HDF |
| ● | 625°F HDF |

12/24

FIG. 12



--S-- SOLVENT DEWAXED OIL

□ MLDW: Std HDF Cat @ 400 psig

○ MLDW: Std HDF Cat @ 2200 psig

● MLDW: Arosat HDF Cat @ 2500 psig

13/24

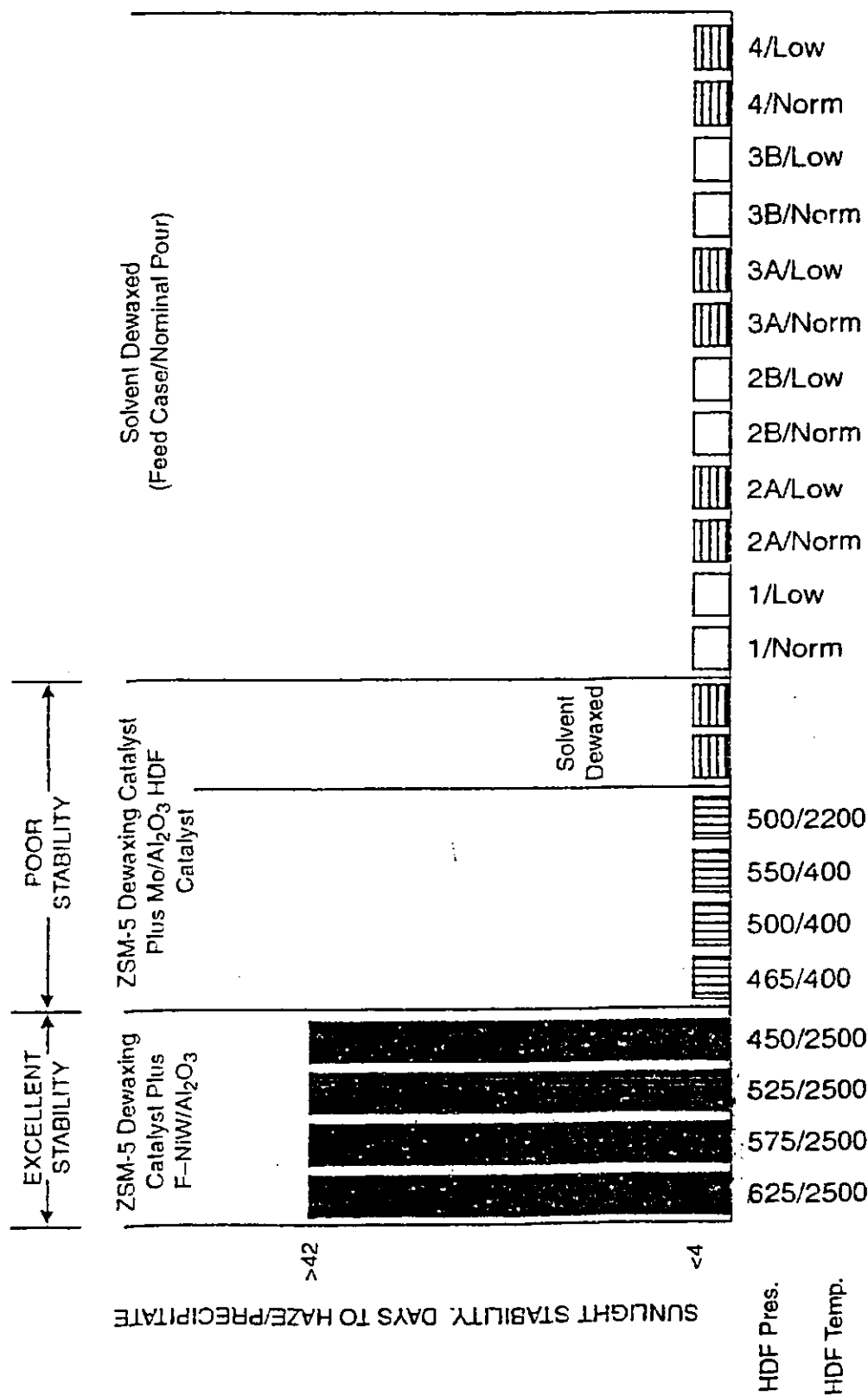


FIG. 13

14/24

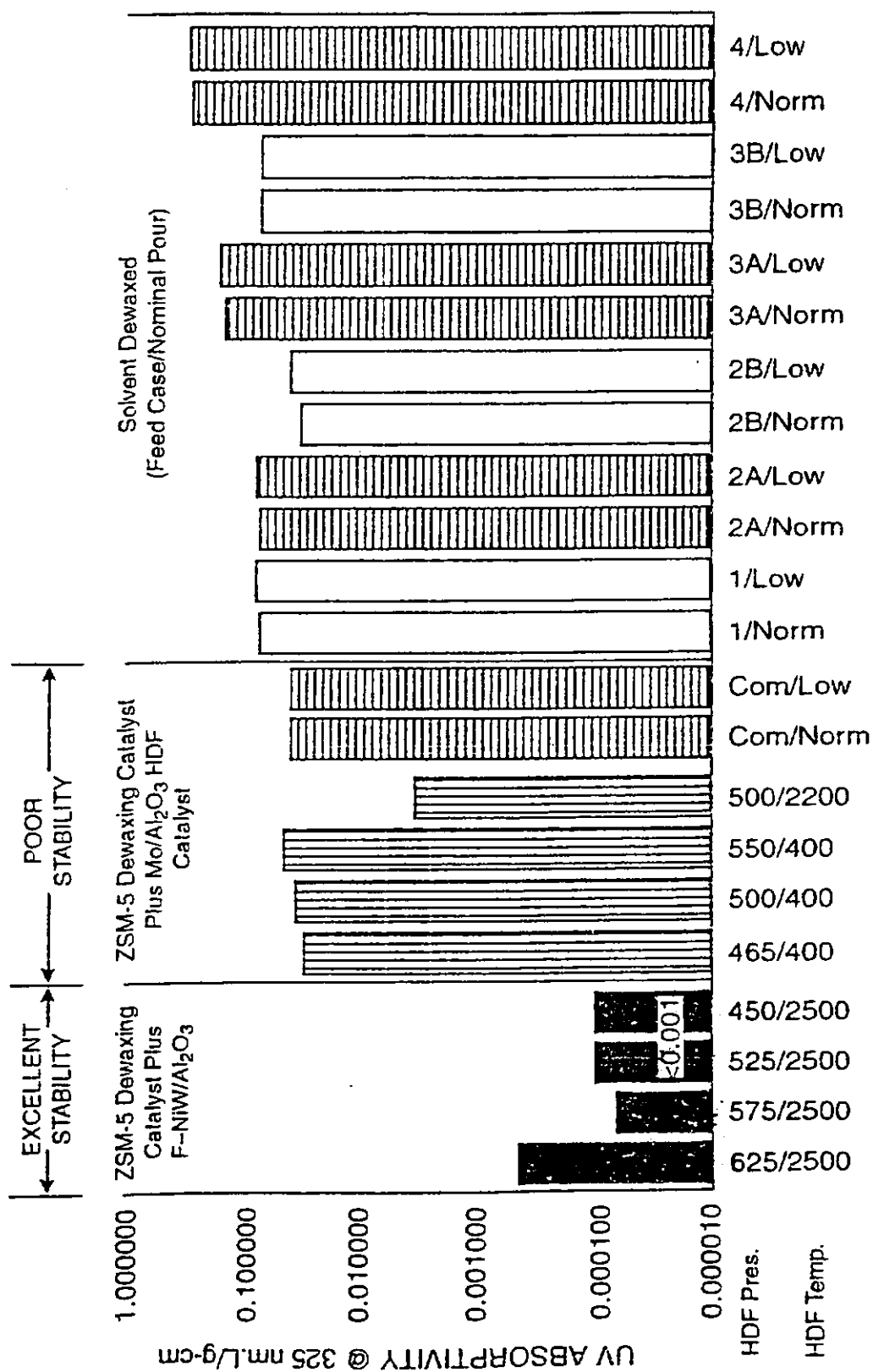


FIG. 14

15/24

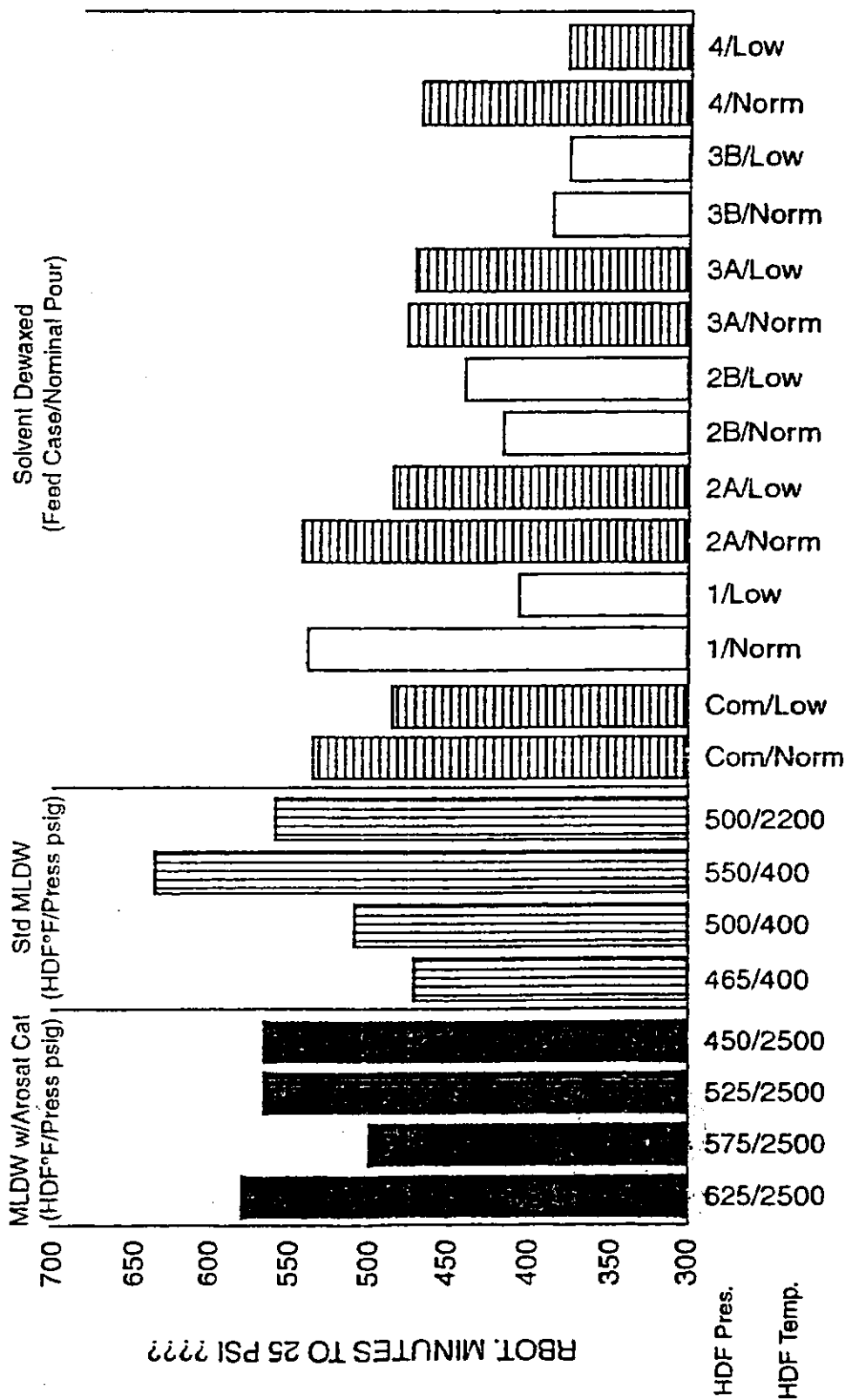
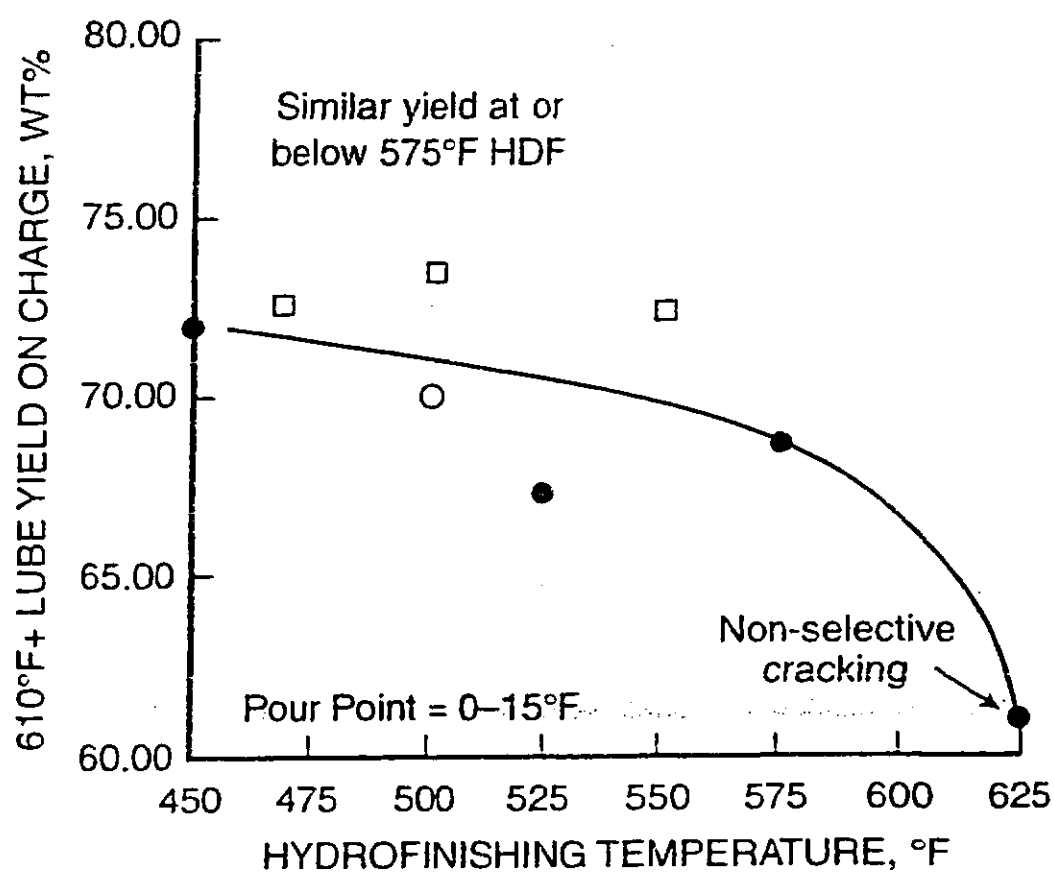


FIG. 15

16/24

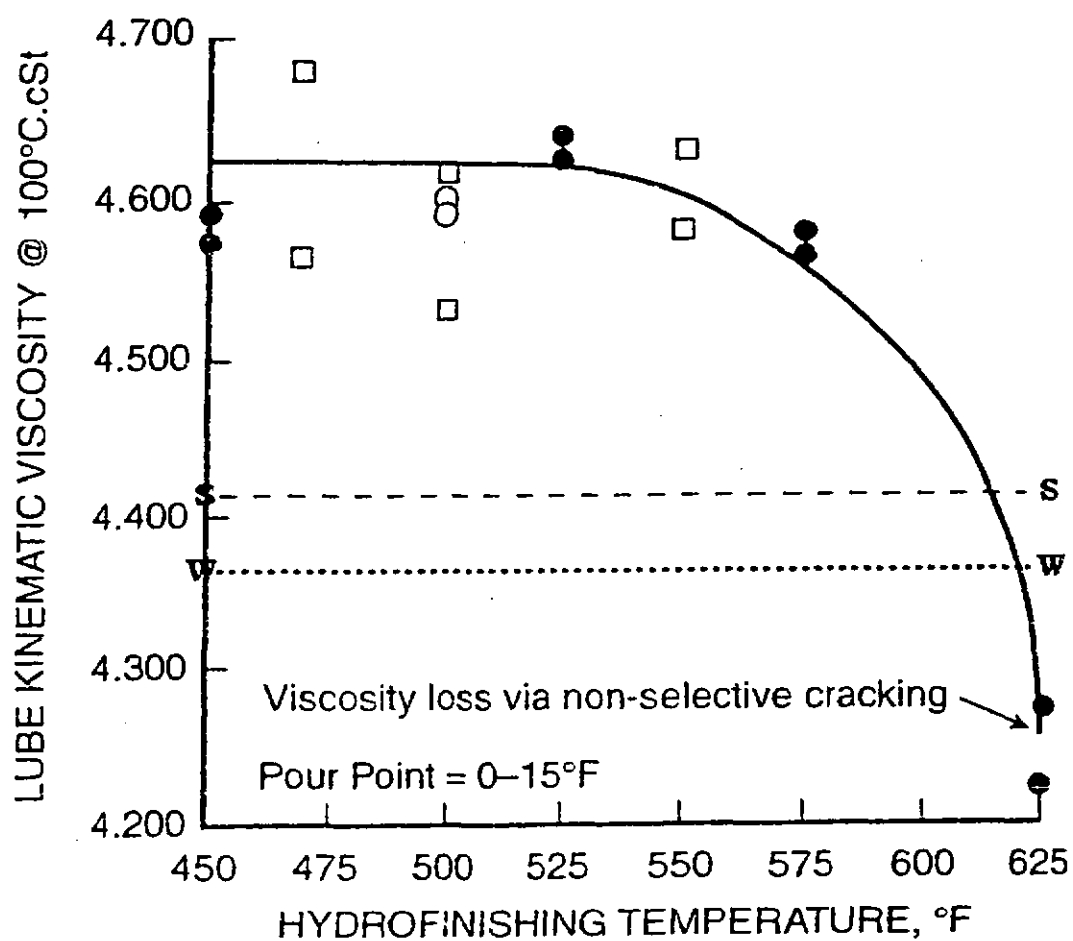
FIG. 16



- MLDW: Std HDF Cat @ 400 psig
- MLDW: Std HDF Cat @ 2200 psig
- MLDW: Arosat HDF Cat @ 2500 psig

17/24

FIG. 17



---W--- WAXY CHARGE

- -S- - SOLVENT DEWAXED OIL

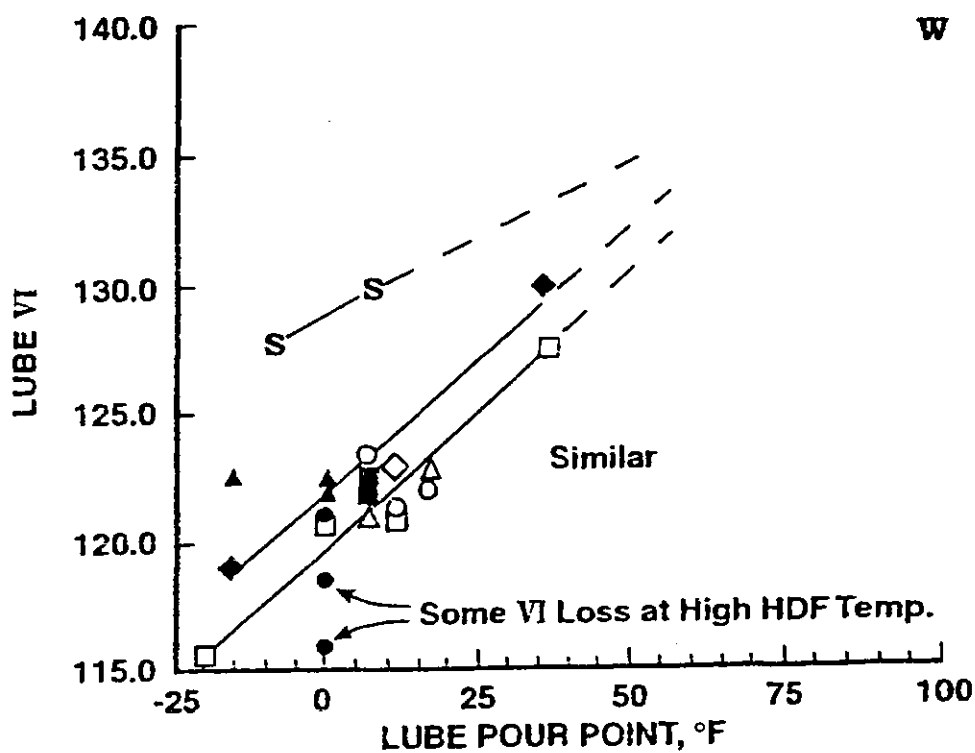
□ MLDW: Std HDF Cat @ 400 psig

○ MLDW: Std HDF Cat @ 2200 psig

● MLDW: Arosat HDF Cat @ 2500 psig

18/24

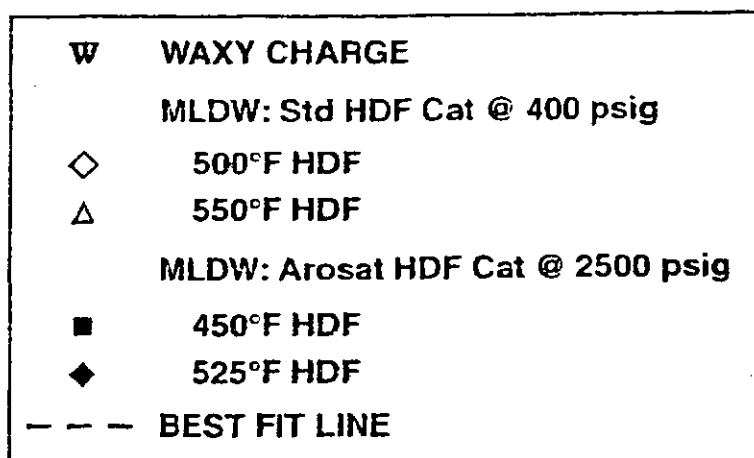
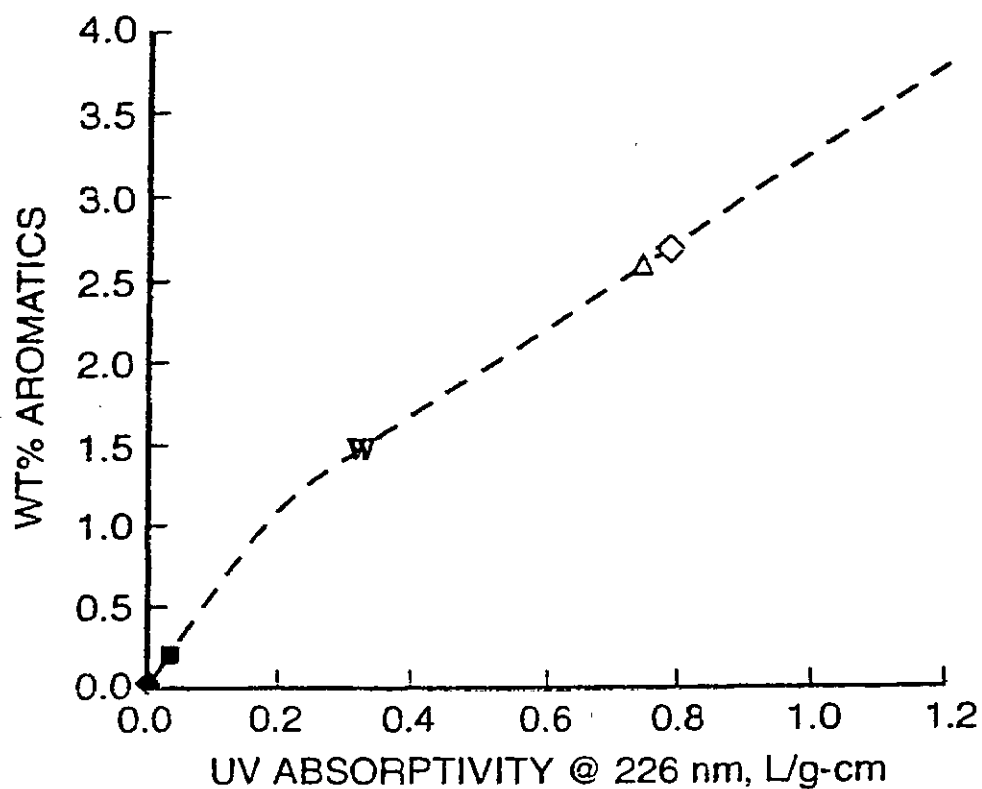
FIG. 18



- | | |
|---|----------------------------------|
| W | WAXY CHARGE |
| S | SOLVENT DEWAXED OIL |
| | MLDW: Std HDF Cat @ 400 psig |
| □ | 465°F HDF |
| ◇ | 500°F HDF |
| △ | 550°F HDF |
| | MLDW: Std HDF Cat @ 2200 psig |
| ○ | 500°F HDF |
| | MLDW: Arosat HDF Cat @ 2500 psig |
| ■ | 450°F HDF |
| ◆ | 525°F HDF |
| ▲ | 575°F HDF |
| ● | 625°F HDF |

19/24

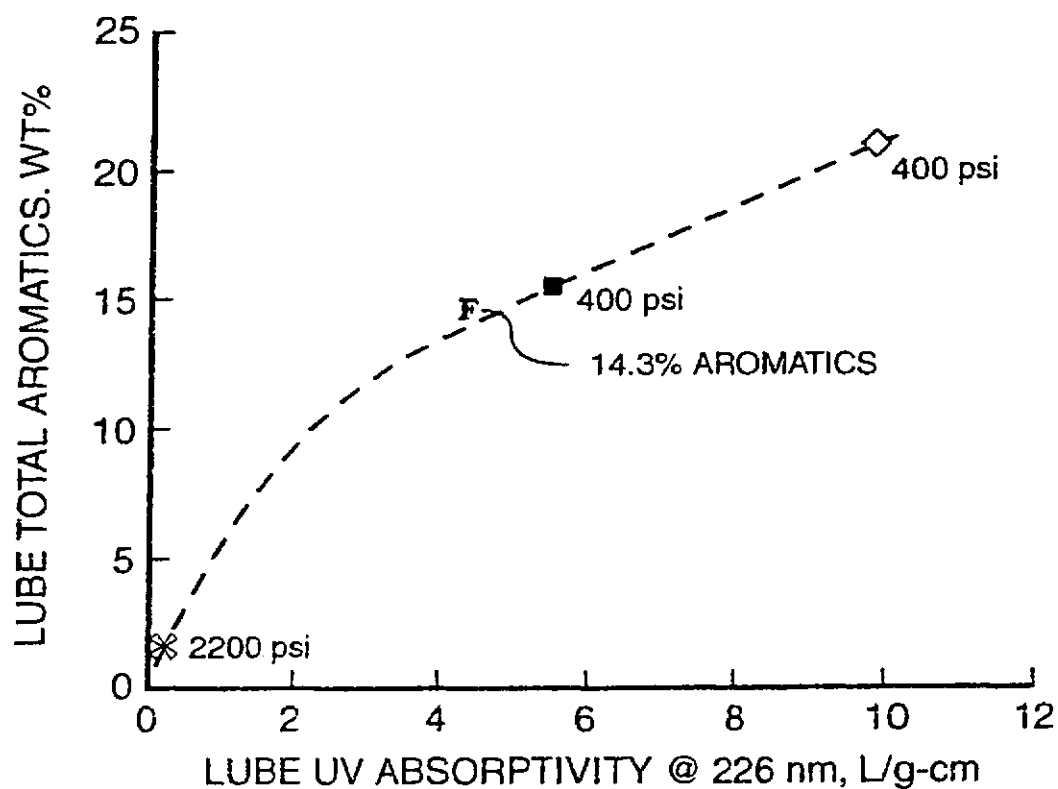
FIG. 19



Total aromatics determined using
HPLC separation with high sensitivity
light scattering mass detector

20/24

FIG. 20

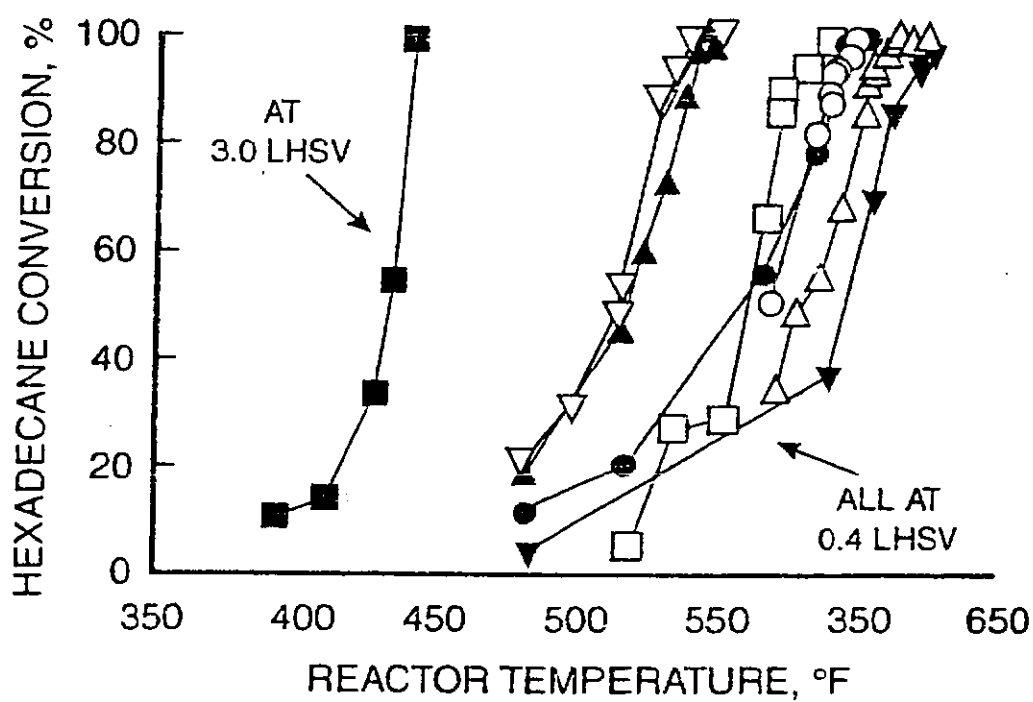


	LHSV	0.2% PV/ ZSM-23°C	0.2% PV/ ZSM-23°C	0.2% PV/ ZSM-23°C
■	1	317	218	28.1
×	1	328	218	154.7
◇	1	334	218	28.1
F	Waxy Feed			
---	Correlation			

UV Absorptivity @ 226 nm can be correlated with Total Aromatics Content for a given family of hydrofinished lub stocks. It is especially useful at very low aromatics where the repeatability of aromatics analysis becomes poor.

21/24

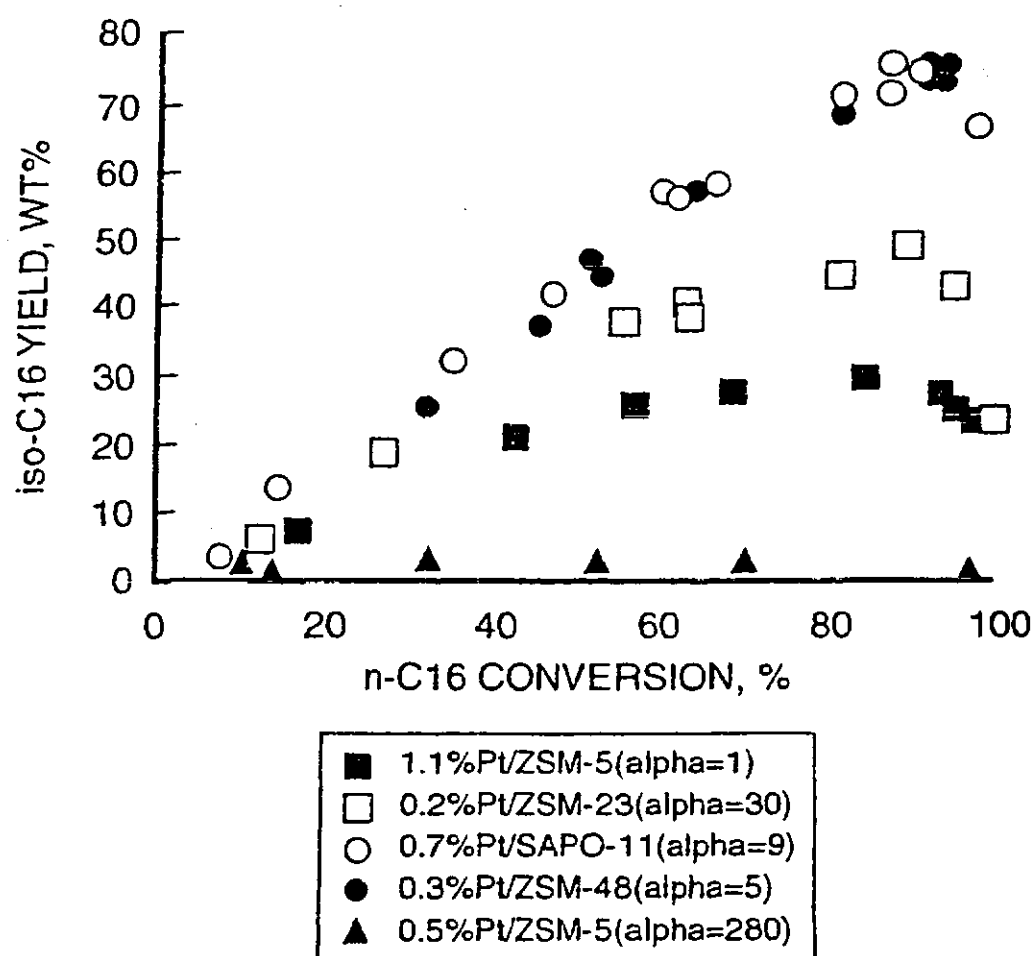
FIG. 21



- 0.2%Pt/ZSM-23(30 alpha)
- ▼ 0.7%Pt/SAPO-11(9 alpha)
- 0.4%Pt/ZSM-5(1 alpha)
- ▲ 1.1%Pt/ZSM-5(8 alpha)
- 0.5%Pt/ZSM-23(alpha=1)
- △ 0.3%Pt/ZSM-48(alpha=5)
- ▽ 0.5%Pt/ZSM-23(alpha=30)
- 0.5%Pt/ZSM-5(alpha=280)

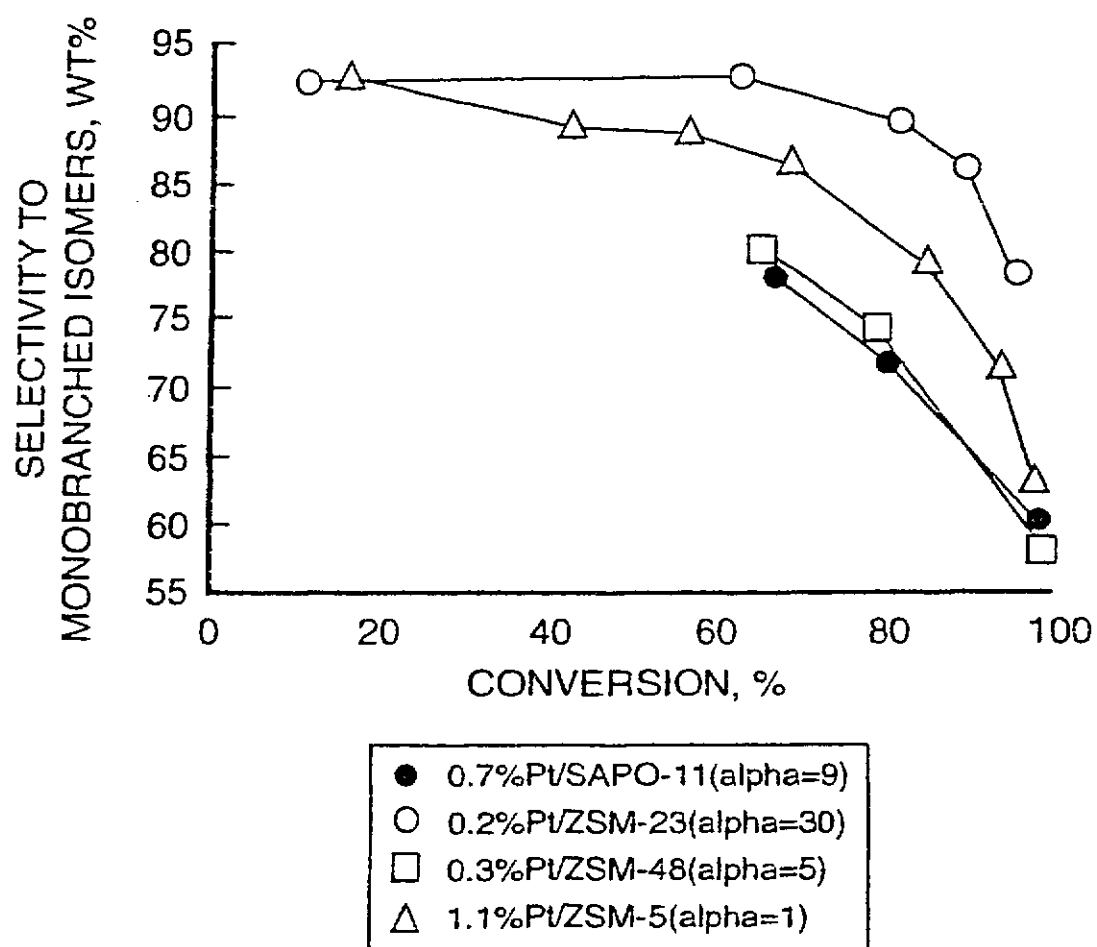
22/24

FIG. 22



23/24

FIG. 23



24/24

FIG. 24

