

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 42 K From 6/22/48 Hr. 0800 to 6/23/48 Hr. 0700

| FLOWS | | RUN CONDITIONS | | DISTILLATIONS | | | CATALYST DATA | | CATALYST ANALYSIS | | |
|--------------|-------|----------------------------|-----|---------------|----------|-------------|---------------|--------|-------------------------------|--|--|
| SCFH | % | Generator Press. | 270 | A S T M | | | Hempel Dist. | | Particle Size | | |
| Oxygen | 2920 | O ₂ Preheat, °F | 475 | Prod. Raw Oil | Gasoline | °F | % | A.P.I. | In Reactor at Start of Period | | |
| Nat. Gas | 4200 | Gas Preheat, °F | 805 | A.P.I. | 49.8 | to 400 | 81.6 | 54.0 | Fresh Catalyst Charged | | |
| Total | 7120 | Reactor Press. | 250 | I.B.P. | 106 | 400-550 | 12.0 | 54.9 | Catalyst Recharged | | |
| Fresh Feed | 12200 | Steam Back Press. | | 5% | | 550+ | 6.4 | | Total | | |
| F.F. by C | 12700 | Temperatures, °F | | 10% | 146 | | | | Catalyst Taken Out | | |
| Avg. F.F. | | Heater Outlet | 20 | | 174 | | | | In Reactor at End of Period | | |
| Wet Gas | 5140 | Catalyst #1 | 650 | 30 | 194 | WATER | | | Reactor d-P, H ₂ O | | |
| Contraction | | #2 | 655 | 40 | 214 | Temp. | % | | Pounds in Reactor | | |
| Recycle | 17260 | #3 | 660 | 50 | 256 | 200 | | | Density, lbs./cu. ft. | | |
| Bleed | 13075 | #4 | 630 | 60 | 258 | 203 | | | Bed Height, Feet | | |
| Total | 30555 | #5 | | 70 | 284 | 208 | | | Aerated | | |
| Total Feed | 42555 | Average | | 80 | 510 | A.P.I. 10.5 | | | Settled | | |
| Recycle/F.F. | 2.49 | Product Separator | | 90 | 346 | | | | Compacted | | |
| Inlet Vel. | | | | 95 | 376 | | | | Sp. Grav. | | |
| Steam Flow | | | | E.P. | 400 | | | | Inventory Figures | | |
| | | | | Rec. | 98.0 | | | | From d-P Meters | | |
| | | | | Res. | 1.0 | | | | | | |
| | | | | Loss | 1.0 | | | | | | |

| NATURAL GAS | | PRODUCT INSPECTION | | | | | | IN | | | | OUT | | | | | |
|--------------------------------|-------|--------------------|-------|---------|---------|----------|--------------------------------|-----------|-------|-------|-------|------------------|-----------|-------|-------|-------|-------|
| % | | Oil | Water | Product | Pour °F | SUS @ °F | Mol % | SCFH m/hr | C | H | O | Mol % | SCFH m/hr | C | H | O | |
| CO ₂ | 1.44 | Neut No. 57.3 | 45.0 | | | | O ₂ | 246.40 | 7.70 | | 15.40 | CO ₂ | 2.3 | .74 | .74 | 1.48 | |
| CH ₄ | 85.92 | Sap No. 58.6 | 40.0 | | | | CO ₂ | 7.04 | .16 | .16 | .32 | CO | 35.7 | 11.49 | 11.49 | 11.49 | |
| C ₂ H ₆ | 9.72 | Hydrox. No. 69.2 | | | | | CH ₄ | 148.80 | 9.30 | 9.30 | 37.20 | CH ₄ | 3.2 | 1.03 | 1.03 | 4.12 | |
| C ₃ H ₈ | 4.35 | Bromine No. 67.3 | | | | | C ₂ H ₆ | 32.40 | 1.08 | 2.16 | 6.48 | H ₂ | 58.2 | 18.75 | | 37.46 | |
| C ₄ H ₁₀ | .18 | % Fe | | | | | C ₃ H ₈ | 21.12 | .48 | 1.44 | 3.84 | N ₂ | 0.6 | .19 | | | |
| N ₂ | .39 | % Alc | 9.6 | | | | C ₄ H ₁₀ | 1.16 | .02 | .08 | .20 | H ₂ O | | | | 5.50 | |
| O ₂ | | | | | | | N ₂ | 1.12 | .04 | | | Total | | | | 32.18 | |
| | | | | | | | Total | 18.78 | 13.14 | 47.72 | 15.72 | | | | | | 47.08 |

| | FRESH FEED | | WET GAS | | | | RECYCLE | COMB. FEED | EFFLUENT | NET CHANGE ON REACTION | | | | | | | | | | | | |
|--------------------------------|------------|-------|---------|-------|---------------|---------------------|---------|------------|----------|------------------------|--------|-------|-------|--------|--------|-------|----------|-------|--------|--------------|------|--------|
| | % | m/hr | #/hr | % | Measured m/hr | At Wt. Balance #/hr | | | | m/hr | m/hr | % | m/hr | % | Carbon | | Hydrogen | | Oxygen | Ultimate Oil | | Unsat. |
| CO | 35.7 | 11.48 | 321.72 | 13.66 | 1.85 | 51.80 | 2.05 | 57.34 | 9.50 | 20.99 | 20.44 | 11.55 | 12.92 | -9.44 | -9.44 | 17.84 | | -9.44 | | | | |
| H ₂ | 58.2 | 18.75 | 37.46 | 41.96 | 5.69 | 11.58 | 6.30 | 12.60 | 29.17 | 47.90 | 46.64 | 35.47 | 39.68 | -12.43 | | | -24.86 | | | | | |
| CO ₂ | 2.3 | .74 | 32.56 | 20.90 | 2.83 | 124.52 | 3.13 | 137.84 | 14.53 | 15.27 | 14.87 | 17.66 | 19.75 | 2.39 | 2.39 | 20.80 | | 4.78 | | | | |
| N ₂ | 0.6 | .19 | 5.32 | .47 | .06 | 1.68 | .07 | 1.86 | .33 | .52 | .51 | .40 | .43 | - | .12 | | | | | | | |
| CH ₄ | 3.2 | 1.03 | 16.48 | 14.51 | 1.97 | 31.52 | 2.18 | 34.89 | 10.09 | 12.12 | 11.80 | 12.27 | 13.73 | 1.15 | 1.15 | 10.01 | 4.60 | | | | | |
| C ₂ H ₄ | | | | 1.83 | .25 | 7.00 | .28 | 7.75 | 1.27 | 1.27 | 1.24 | 1.55 | 1.73 | .28 | .56 | 4.87 | 1.12 | | | | | |
| C ₂ H ₆ | | | | 1.44 | .20 | 6.00 | .22 | 6.64 | 1.00 | 1.00 | .97 | 1.22 | 1.36 | .22 | .44 | 3.83 | .66 | | | | | |
| C ₃ H ₆ | | | | 2.03 | .28 | 11.76 | .31 | 13.02 | 1.41 | 1.41 | 1.37 | 1.72 | 1.92 | .31 | .93 | 8.09 | 1.86 | | | 11.72 | 6.25 | 1.88 |
| C ₃ H ₈ | | | | .47 | .06 | 2.64 | .07 | 2.92 | .33 | .33 | .32 | .40 | .45 | .07 | .21 | 1.83 | .56 | | | | | |
| C ₄ H ₈ | | | | 1.33 | .18 | 10.08 | .20 | 11.16 | .92 | .92 | .90 | 1.12 | 1.23 | .20 | .80 | 6.96 | 1.60 | | | 10.60 | 6.10 | 1.74 |
| C ₄ H ₁₀ | | | | .43 | .06 | 3.48 | .07 | 3.85 | .30 | .30 | .28 | .37 | .41 | .07 | .28 | 2.44 | .70 | | | 3.85 | 4.86 | .79 |
| C ₅ H ₁₀ | | | | .68 | .09 | 6.30 | .10 | 6.97 | .47 | .47 | .46 | .57 | .64 | .10 | .50 | 4.35 | 1.00 | | | 6.97 | 5.40 | 1.29 |
| C ₆ H ₁₂ | | | | .29 | .04 | 3.36 | .04 | 3.72 | .20 | .20 | .19 | .24 | .27 | .04 | .24 | 2.09 | .48 | | | 3.72 | 5.50 | .68 |
| OIL | | | | | | | (27.16) | | | | | .19 | .21 | 1.94 | 16.88 | 3.88 | | | 27.16 | 6.50 | 4.18 | |
| WATER | | | | | | | | | | | | 4.66 | 5.21 | | | 8.40 | | | (4.20) | | | |
| TOTAL | | 32.19 | 413.54 | | 13.56 | 271.52 | 15.02 | 300.56 | 69.53 | 102.70 | 100.00 | 89.39 | 99.98 | 13.16 | | 99.99 | | | | 64.02 | | 10.56 |
| H ₂ +CO | | 30.22 | | | 7.54 | | 8.35 | | | | | | | | | | | | | | | |
| H ₂ /CO | | 1.63 | | | 3.08 | | 3.07 | | | | | | | | | | | | | | | |

Yield Calculations assume "oil" is CH₂, and is found by difference on Carbon, and H₂ by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M³ = 16.91 × #/MCF. cc/M³ = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 42 I From 6/23/48 Hr. 0800 to 6/24/48 Hr. 0700

| FLOWS | | RUN CONDITIONS | | | DISTILLATIONS | | | CATALYST DATA | | | CATALYST ANALYSIS | | | |
|--------------|-------|----------------------------|-----|---------------|---------------|---------|--------------|-------------------------------|-----------------------------|---------------|-------------------|------|-------|-------------------|
| SCFH | % | Generator Press. | 275 | A S T M | | | Hempel Dist. | | | Particle Size | | | | |
| Oxygen | 2820 | O ₂ Preheat, °F | 475 | Prod. Rev Oil | Gas-oil line | "F | % | A.P.I. | Fresh Catalyst Charged | Screen | | | | |
| Nat. Gas | 4500 | Gas Preheat, °F | 780 | A.P.I. | 49.7 | to 400 | 80.0 | 54.0 | Catalyst Recharged | Frac. | M | % | M | % |
| Total | 7120 | Reactor Press. | 230 | I.B.P. | 110 | 400-550 | 14.8 | 54.1 | Total | On 40 | 420+ | 0.2 | 80+ | |
| Fresh Feed | 12800 | Steam Back Press. | | | | 550+ | 5.8 | | Catalyst Taken Out | 100 | 419-150 | 31.5 | 80-40 | |
| F F by C | 12800 | Temperatures, °F | | 10% | 152 | | | | In Reactor at End of Period | 150 | 149-105 | 17.7 | 40-20 | |
| Avg. F.F. | | Heater Outlet | | 20 | 178 | | | | | 200 | 104-74 | 12.1 | 20-10 | |
| Wet Gas | 5360 | Catalyst #1 | 645 | 30 | 200 | WATER | | | | 250 | 73-62 | 3.8 | 10-0 | |
| Contraction | | #2 | 655 | 40 | 220 | Temp | % | Reactor d-P, H ₂ O | | 325 | 61-44 | 14.7 | | |
| Recycle | 18050 | #3 | 660 | 50 | 240 | 200 | | Pounds in Reactor | | <325 | 43-0 | 20.0 | | |
| Bleed | 13130 | #4 | 635 | 60 | 260 | 203 | | Density, lbs./cu. ft. | | | | | | Chem Anal. |
| | | #5 | | 70 | 280 | 208 | | Bed Height, Feet | | | | | | |
| Total | 31180 | Average | | 80 | 302 | A.P.I. | 10.5 | | | | | | | |
| Total Feed | 45980 | Product Separator | | 90 | 348 | | | | | | | | | |
| Recycle/F.F. | 2.44 | | | 95 | 374 | | | | | | | | | |
| Inlet Vel. | | | | E.P. | 398 | | | | Space Vel. SCFH/lb. cat. | | | | | |
| Steam Flow | | | | Rec. | 98.0 | | | | Inventory Figures | 90.7 | | | 16.6 | m ² gm |
| | | | | Res. | 1.0 | | | | From d-P Meters | | | | | |
| | | | | Loss | 1.0 | | | | | | | | | |

| NATURAL GAS | | PRODUCT INSPECTION | | | | | | IN | | | | | OUT | | | | |
|--------------------------------|-------|--------------------|-------|---------|---------|----------|--------------------------------|-----------|-------|-------|-------|------------------|-----------|-------|-------|-------|-------|
| | % | Oil | Water | Product | Pour °F | SUS @ °F | Mol % | SCFH m/hr | C | H | O | Mol % | SCFH m/hr | C | H | O | |
| CO ₂ | 1.66 | Neut No. 54.5 | 40.9 | | | | O ₂ | 238.08 | 7.44 | | 14.88 | CO ₂ | 2.2 | .74 | .74 | 1.48 | |
| CH ₄ | 85.58 | Sap No. 56.9 | 39.6 | | | | CO | 8.36 | .19 | .19 | .38 | CO | 33.1 | 11.18 | 11.18 | 11.18 | |
| C ₂ H ₆ | 8.47 | Hydrox. No. 76.4 | | | | | CH ₄ | 155.36 | 9.71 | 9.71 | 38.84 | CH ₄ | 4.1 | 1.38 | 1.38 | 5.52 | |
| C ₃ H ₈ | 3.85 | Bromine No. 76.6 | | | | | C ₂ H ₆ | 28.80 | .96 | 1.92 | 5.76 | H ₂ | 60.3 | 20.36 | | 40.72 | |
| C ₄ H ₁₀ | .16 | % Fe | | | | | C ₃ H ₈ | 19.36 | .44 | 1.32 | 3.52 | N ₂ | 0.3 | .10 | | | |
| N ₂ | .28 | % Alc | 9.8 | | | | C ₄ H ₁₀ | 1.16 | .02 | .08 | .20 | H ₂ O | | | | 5.20 | |
| O ₂ | | | | | | | N ₂ | .84 | .03 | | | Total | | | | 33.76 | |
| | | | | | | | Total | 18.79 | 13.22 | 48.32 | 15.26 | | | | | | 15.26 |

| FRESH FEED | | | | WET GAS | | | | RECYCLE | COMB. FEED | EFFLUENT | NET CHANGE ON REACTION | | | | | | | | | | | | |
|--------------------------------|-------|--------|--------|----------|----------------|-------|--------|---------|------------|----------|------------------------|-------|--------|--------|--------|----------|------|--------|--------------|-------|----------------|------|------|
| % | m/hr | #/hr | % | Measured | At Wt. Balance | m/hr | m/hr | m/hr | m/hr | % | m/hr | % | Carbon | | | Hydrogen | | Oxygen | Ultimate Oil | | Unsat. | | |
| | | | | m/hr | #/hr | m/hr | #/hr | | | | | | m/hr | a/hr | % | a/hr | % | a/hr | #/hr | #/gal | gal/hr | % | |
| CO | 33.1 | 11.18 | 313.04 | 13.07 | 1.85 | 51.80 | 2.23 | 62.47 | 12.49 | 23.67 | 18.34 | 14.72 | 12.63 | - 8.95 | - 8.95 | 19.95 | | - 8.95 | | | | | |
| H ₂ | 60.3 | 20.36 | 40.72 | 44.50 | 6.26 | 12.52 | 7.55 | 15.10 | 42.34 | 62.70 | 48.59 | 49.89 | 42.80 | -12.81 | | | | -25.62 | | | | | |
| CO ₂ | 2.2 | .74 | 32.56 | 19.61 | 2.77 | 21.88 | 3.34 | 146.99 | 18.74 | 19.21 | 14.89 | 22.08 | 18.94 | 2.60 | 2.60 | 23.26 | | 5.20 | | | | | |
| N ₂ | 0.3 | .10 | 2.80 | .31 | .04 | 1.12 | .05 | 1.35 | .30 | .40 | .31 | .35 | .30 | - .05 | | | | | | | | | |
| CH ₄ | 4.1 | 1.38 | 22.08 | 15.27 | 2.16 | 34.56 | 2.60 | 41.68 | 14.59 | 15.97 | 12.37 | 17.19 | 14.75 | 1.22 | 1.22 | 10.91 | 4.88 | | | | | | |
| C ₂ H ₆ | | | | 1.52 | .21 | 5.88 | .25 | 7.09 | 1.45 | 1.45 | 1.12 | 1.70 | 1.46 | .25 | .50 | 4.47 | 1.00 | | | | | | |
| C ₂ H ₄ | | | | 1.34 | .19 | 5.70 | .23 | 6.87 | 1.28 | 1.28 | .99 | 1.61 | 1.36 | .23 | .46 | 4.11 | 1.38 | | | | | | |
| C ₃ H ₆ | | | | 1.79 | .25 | 10.50 | .30 | 12.66 | 1.71 | 1.71 | 1.33 | 2.01 | 1.72 | .30 | .90 | 8.05 | 1.80 | | | | 11.39 | 6.25 | 1.82 |
| C ₃ H ₈ | | | | .37 | .05 | 2.20 | .06 | 2.65 | .35 | .35 | .27 | .41 | .35 | .06 | .18 | 1.61 | .48 | | | | | | |
| C ₄ H ₈ | | | | 1.12 | .16 | 8.96 | .19 | 10.80 | 1.07 | 1.07 | .83 | 1.26 | 1.06 | .19 | .76 | 6.80 | 1.52 | | | | 10.26 | 6.10 | 1.68 |
| C ₄ H ₁₀ | | | | .42 | .06 | 3.48 | .07 | 4.20 | .40 | .40 | .31 | .47 | .40 | .07 | .28 | 2.50 | .70 | | | | 4.20 | 4.86 | .86 |
| C ₅ H ₁₀ | | | | .60 | .08 | 5.60 | .10 | 6.75 | .57 | .57 | .44 | .67 | .57 | .10 | .50 | 4.47 | 1.00 | | | | 6.75 | 5.40 | 1.25 |
| C ₆ H ₁₂ | | | | .28 | .04 | 3.36 | .05 | 4.05 | .27 | .27 | .21 | .32 | .27 | .05 | .30 | 2.68 | .60 | | | | 4.05 | 5.80 | .74 |
| OIL | | | | | | | | (17.50) | | | | .13 | .11 | | 1.25 | 11.18 | 2.50 | | | | 17.50 | 6.50 | 2.69 |
| WATER | | | | | | | | | | | | 3.75 | 3.22 | | | | 9.76 | | | | (4.88) 3.76 | | |
| TOTAL | 33.77 | 411.20 | | 14.14 | 267.56 | 17.02 | 322.66 | 95.57 | 129.05 | 100.00 | 116.56 | 99.96 | 16.74 | | 99.99 | | | | | | 54.15 | | 9.04 |
| H ₂ +CO | 31.54 | | | 8.11 | | 9.78 | | | | | | | | | | | | | | | | | |
| H ₂ /CO | 1.82 | | | 3.38 | | 3.39 | | | | | | | | | | | | | | | | | |

| ULTIMATE YIELDS | | | | | | | WEIGHT BALANCE | | | EFFLUENT RATIOS | | CONTRACTION: 49.6 | | |
|--------------------------------|--------|--------|--------------------------|--------|--------|----------------------------|----------------|---------|-------|-----------------|----------------------------------|--------------------------------|----------------------------|----------------------------|
| % | CO Fed | #/hr | H ₂ /CO #/MCF | g/M3 | Gal/hr | H ₂ /CO Gal/MCF | cc/M3 | #/hr | % | #/hr | H ₂ /H ₂ O | C ₂ /C ₁ | C ₀ Conversion: | H ₂ Conversion: |
| C ₁ +C ₂ | 19.49 | 33.56 | 2.81 | 47.52 | | | | Wet Gas | 267.6 | 322.4 | 13.30 | 1.50 | 80.0 | 62.9 |
| C ₃ + | 37.29 | 58.61 | 4.90 | 82.86 | | | | Oil | 15.8 | 15.8 | | | | |
| C ₄ + | 27.63 | 43.30 | 3.62 | 61.21 | | | | Water | 73.0 | 73.0 | | | | |
| Ult. Oil | 54.15 | 4.53 | 76.60 | 9.04 | 0.76 | 107.39 | | Total | 356.4 | 86.6 | 411.2 | | | |
| CO ₂ | 23.26 | 114.43 | 9.58 | 162.00 | | | | | | | | | | |
| H ₂ O | 67.60 | 5.65 | 95.64 | | | | | | | | | | | |

Yield Calculations assume "oil" is CH₂, and is found by difference on Carbon, and H₂ by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M³ = 16.91 × #/MCF. cc/M³ = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number **42 W** From **6/24/48** Hr. **0800** to **6/25/48** Hr. **0700**

| FLOWS | | RUN CONDITIONS | | | DISTILLATIONS | | | CATALYST DATA | | | CATALYST ANALYSIS | | | | | | |
|--------------|-------|----------------------------|-----|---------|---------------|----------|--------------|---------------|-------------------------------|-------------------------------|-------------------|-----------------------|---------------|---------|-------------|------------------|-------------------|
| SCFH | % | Generator Press. | 275 | A S T M | | | Hempel Dist. | | | In Reactor at Start of Period | | | Particle Size | | | | |
| Oxygen | 2740 | O ₂ Preheat, °F | 460 | Prod. | Raw Oil | Gasoline | °F | % | A.P.I. | Fresh Catalyst Charged | | | Screen | | | | |
| Nat. Gas | 4160 | Gas Preheat, °F | 770 | A.P.I. | 47.5 | | to 400 | 81.0 | 53.0 | Catalyst Recharged | | | Frac. | M | % | M | % |
| Total | 6900 | Reactor Press. | 230 | I.B.P. | | 118 | 400-550 | 16.3 | 33.9 | Total | | | On 40 | 420+ | 0.8 | 80+ | |
| Fresh Feed | 11600 | Steam Back Press. | | 5% | | | 550+ | | | Catalyst Taken Out | | | 100 | 419-150 | 50.7 | 80-40 | |
| F F by C | 12000 | Temperatures, °F | | 10% | | 156 | | | | In Reactor at End of Period | | | 150 | 149-105 | 21.4 | 40-20 | |
| Avg. F F. | | Heater Outlet | | 20 | | 186 | | | | | | | 200 | 104-74 | 9.0 | 20-10 | |
| Wet Gas | 5100 | Catalyst #1 | 640 | 30 | | 208 | WATER | | | | | | 250 | 73-62 | 2.2 | 10-0 | |
| Contraction | | #2 | 650 | 40 | | 228 | Temp. | % | Reactor d-P, H ₂ O | | | 325 | 61-44 | 5.2 | | | |
| Recycle | 17020 | #3 | 665 | 50 | | 248 | 200 | | Pounds in Reactor | | | <325 | 43-0 | 10.6 | | | |
| Bleed | 13039 | #4 | 630 | 60 | | 268 | 203 | | Density, lbs./cu. ft. | | | Density, lbs./cu. ft. | | | Chem. Anal. | | |
| Total | 30059 | #5 | 630 | 70 | | 288 | 208 | | Bed Height, Feet | | | Aerated | | | 129.0 | % Fe | |
| Total Feed | 41659 | Average | | 80 | | 312 | A.P.I. | 10.5 | | | | Settled | | | 130.0 | % C | |
| Recycle/F.F. | 2.59 | Product Separator | | 90 | | 348 | | | | | | Compacted | | | 138.0 | % Oil | |
| Inlet Vel. | | | | 95 | | 376 | | | Space Vel. SCFH/lb. cat. | | | Sp. Grav. | | | 3.6 | Specific Surface | |
| Steam Flow | | | | E.P. | | 401 | | | Inventory Figures | | | From d-P Meters | | | 85.9 | 18.7 | m ² gm |
| | | | | Rec. | | 97.6 | | | | | | | | | | | |
| | | | | Res. | | 1.3 | | | | | | | | | | | |
| | | | | Loss | | 1.2 | | | | | | | | | | | |

| NATURAL GAS | | PRODUCT INSPECTION | | | | | | IN | | | | | OUT | | | | |
|--------------------------------|-------|--------------------|-------|---------|---------|----------|--|--------------------------------|-----------|-------|-------|-------|------------------|-----------|-------|-------|-------|
| % | | Oil | Water | Product | Pour °F | SUS @ °F | | Mol % | SCFH m/hr | C | H | O | Mol % | SCFH m/hr | C | H | O |
| CO ₂ | 1.43 | Neut. No | 57.2 | 41.1 | | | | O ₂ | 231.36 | 7.23 | | 14.46 | CO ₂ | 2.1 | .64 | .64 | 1.28 |
| CH ₄ | 85.31 | Sop No. | 56.9 | 39.0 | | | | CO ₂ | 7.04 | .16 | .16 | .32 | CO | 33.3 | 10.19 | 10.19 | 10.19 |
| C ₂ H ₆ | 9.13 | Hydrox. No. | 81.7 | | | | | CH ₄ | 149.92 | 9.37 | 9.37 | 37.48 | CH ₄ | 4.8 | 1.47 | 1.47 | 5.88 |
| C ₃ H ₈ | 3.48 | Bromine No. | 89.8 | | | | | C ₂ H ₆ | 30.00 | 1.00 | 2.00 | 6.00 | H ₂ | 57.7 | 17.66 | | 35.32 |
| C ₄ H ₁₀ | .16 | % Fe | | | | | | C ₃ H ₈ | 16.72 | .88 | 1.14 | 3.04 | N ₂ | 2.1 | .64 | | |
| N ₂ | .50 | % Alc | 10.6 | | | | | C ₄ H ₁₀ | 1.16 | .02 | .08 | .20 | H ₂ O | | | | 6.62 |
| O ₂ | | | | | | | | N ₂ | 1.40 | .05 | | | Total | | | | 30.60 |
| | | | | | | | | Total | 18.21 | 12.75 | 46.72 | 14.78 | | | | | |

| FRESH FEED | | | | WET GAS | | | | RECYCLE | | COMB. FEED | | EFFLUENT | | NET CHANGE ON REACTION | | | | | | | | |
|--------------------------------|------|-------|--------|----------|----------------|-------|---------|---------|-------|------------|--------|----------|--------|------------------------|----------|--------|--------|--|--------------|-------|--------|------|
| % | m/hr | #/hr | | Measured | At Wt. Balance | | | m/hr | m/hr | % | m/hr | % | Carbon | | Hydrogen | | Oxygen | | Ultimate Oil | | Unsat. | |
| CO | 33.3 | 10.19 | 285.32 | 14.14 | 1.80 | 53.20 | 1.95 | 54.51 | 11.21 | 21.40 | 19.48 | 13.16 | 13.51 | - 8.24 | - 8.24 | 19.14 | | | | | | |
| H ₂ | 57.7 | 17.66 | 35.32 | 41.88 | 5.64 | 11.28 | 5.78 | 11.56 | 33.19 | 50.85 | 46.29 | 38.97 | 40.01 | -11.88 | | -23.76 | | | | | | |
| CO ₂ | 2.1 | .64 | 28.16 | 19.43 | 2.62 | 15.28 | 2.68 | 118.12 | 16.40 | 16.04 | 14.60 | 18.08 | 18.56 | 2.04 | 2.04 | 20.02 | | | 4.08 | | | |
| N ₂ | 2.1 | .64 | 17.92 | .05 | .01 | .28 | .01 | .29 | .04 | .68 | .62 | .05 | .05 | - .63 | | | | | | | | |
| CH ₄ | 4.8 | 1.47 | 23.52 | 16.44 | 2.21 | 35.36 | 2.26 | 36.23 | 13.03 | 14.50 | 13.20 | 15.29 | 15.70 | .79 | .79 | 7.75 | 3.16 | | | | | |
| C ₂ H ₄ | | | | 1.66 | .22 | 6.16 | .23 | 6.31 | 1.32 | 1.32 | 1.20 | 1.55 | 1.58 | .23 | .46 | 4.51 | .92 | | | | | |
| C ₂ H ₆ | | | | 1.33 | .18 | 5.40 | .18 | 5.53 | 1.05 | 1.05 | .96 | 1.23 | 1.26 | .18 | .36 | 3.53 | 1.08 | | | | | |
| C ₃ H ₆ | | | | 1.81 | .24 | 10.08 | .25 | 10.33 | 1.43 | 1.43 | 1.30 | 1.68 | 1.72 | .25 | .75 | 7.36 | 1.50 | | | 9.30 | 6.25 | 1.49 |
| C ₃ H ₈ | | | | .35 | .05 | 2.20 | .05 | 2.25 | .28 | .28 | .25 | .33 | .34 | .05 | .15 | 1.47 | .40 | | | | | |
| C ₄ H ₈ | | | | 1.53 | .21 | 11.76 | .22 | 12.05 | 1.21 | 1.21 | 1.10 | 1.43 | 1.47 | .22 | .88 | 8.64 | 1.76 | | | 11.45 | 6.10 | 1.88 |
| C ₄ H ₁₀ | | | | .43 | .06 | 3.48 | .06 | 3.57 | .34 | .34 | .31 | .40 | .41 | .06 | .24 | 2.36 | .60 | | | 3.57 | 4.86 | .73 |
| C ₅ H ₁₀ | | | | .62 | .08 | 5.60 | .08 | 5.74 | .49 | .49 | .45 | .57 | .58 | .08 | .40 | 3.93 | .80 | | | 5.74 | 5.40 | 1.06 |
| C ₆ H ₁₂ | | | | .33 | .04 | 3.36 | .04 | 3.44 | .26 | .26 | .24 | .30 | .31 | .04 | .24 | 2.36 | .48 | | | 3.44 | 5.50 | .63 |
| OIL | | | | | | | (27.02) | | | | .19 | .20 | | 1.93 | 18.94 | 3.86 | | | 27.02 | 6.50 | 4.16 | |
| WATER | | | | | | | | | | | 4.16 | 4.27 | | | | 9.20 | | | (4.60) | 4.16 | | |
| TOTAL | | 30.60 | 390.24 | | 13.46 | 263.4 | 13.79 | 269.93 | 79.25 | 109.85 | 100.00 | 97.39 | 99.99 | 16.81 | | 100.01 | | | 60.52 | | 9.95 | |
| H ₂ +CO | | 27.85 | | | 7.54 | | 7.73 | | | | | | | | | | | | | | | |
| H ₂ /CO | | 1.73 | | | 2.97 | | 2.96 | | | | | | | | | | | | | | | |

Yield Calculations assume "oil" is CH₂, and is found by difference on Carbon, and H₂O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M³ = 16.91 × #/MCF. cc/M³ = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 42 N From 6/25/48 Hr. 0800 to 6/26/48 Hr. 0700

| FLOWS | | RUN CONDITIONS | | | DISTILLATIONS | | | CATALYST DATA | | | CATALYST ANALYSIS | | | | | | | |
|--------------|-------|----------------------------|------|--|---------------|---------|----------|-----------------------------|--------------------------|-------------------------------|-------------------------------|-----------|-----------------------|---------------|------------------------|------|-------|---|
| SCFH | % | Generator Press | 275 | | A S T M | | | Hempel Dist. | | | In Reactor at Start of Period | | | Particle Size | | | | |
| Oxygen | 2850 | O ₂ Preheat, °F | 440 | | Prod. | Raw Oil | Gasoline | °F | % | A.P.I. | Fresh Catalyst Charged | | | Screen | | | | |
| Nat. Gas | 4170 | Gas Preheat, °F | 750 | | A.P.I. | 49.3 | | to 400 | 77.6 | 54.8 | Catalyst Recharged | | | Frac. | M | % | M | % |
| Total | 7020 | Reactor Press. | 235 | | I.B.P. | 110 | | 400-550 | 17.0 | 34.4 | Total | | | On 40 | 420+ | 0.2 | 80+ | |
| Fresh Feed | 11600 | Steam Back Press. | | | 5% | | | 550+ | | | Catalyst Taken Out | | | 100 | 419-150 | 66.0 | 80-40 | |
| F.F. by C | 11650 | Temperatures, °F | | | 10% | 148 | | | | | In Reactor at End of Period | | | 150 | 149-105 | 21.0 | 40-20 | |
| Avg. F.F. | | Heater Outlet | 20 | | | 166 | | | | | | | | 200 | 104-74 | 6.2 | 20-10 | |
| Wet Gas | 5350 | Catalyst #1 | 635 | | 30 | 200 | | WATER | | | | | | 250 | 73-62 | 1.2 | 10-0 | |
| Contraction | | #2 | 650 | | 40 | 220 | | Temp. | % | Reactor d-P, H ₂ O | | | 325 | 61-44 | 2.2 | | | |
| Recycle | 17570 | #3 | 665 | | 50 | 240 | | 200 | | Pounds in Reactor | | | <325 | 43-0 | 3.2 | | | |
| Bleed | 13102 | #4 | 620 | | 60 | 260 | | 203 | | Density, lbs./cu. ft. | | | Density, lbs./cu. ft. | | Chem. Anal. | | | |
| Total | 30672 | #5 | 70 | | 280 | | 208 | | Bed Height, Feet | | | Aerated | | 119.0 | % Fe | | | |
| Total Feed | 42272 | Average | 80 | | 310 | | A.P.I. | 10.7 | | | | Settled | | 120.8 | % C | | | |
| Recycle.F.F. | 2.64 | Product Separator | 90 | | 350 | | | | | | | Compacted | | 123.0 | % Oil | | | |
| Inlet Vel. | | | 95 | | 378 | | | | Space Vel. SCFH/lb. cat. | | | Sp. Grav. | | 2.8 | Specific Surface | | | |
| Steam Flow | | | E.P. | | 400 | | | | Inventory Figures | | | | | 87.3 | 18.3 m ² gm | | | |
| | | | Rec. | | 98.0 | | | | From d-P Meters | | | | | | | | | |
| | | | Res. | | 1.0 | | | | | | | | | | | | | |
| | | | Loss | | 1.0 | | | GENERATOR ELEMENTAL BALANCE | | | | | | | | | | |

| NATURAL GAS | | PRODUCT INSPECTION | | | | | | | | | | IN | | | | | OUT | | | | | |
|--------------------------------|-------|--------------------|-------|---------|---------|----------|--|--------------------------------|--------|-------|-------|-------|-----------|---|---|-------|------------------|-----------|-------|-------|-------|-------|
| % | | Oil | Water | Product | Pour °F | SUS @ °F | | | | | | Mol % | SCFH m/hr | C | H | O | Mol % | SCFH m/hr | C | H | O | |
| CO ₂ | 1.65 | Neut. No. | 62.6 | 41.5 | | | | O ₂ | 240.64 | 7.52 | | | | | | 15.04 | CO ₂ | 2.0 | .61 | .61 | | 1.22 |
| CH ₄ | 85.50 | Sop No. | 58.6 | 40.1 | | | | CO ₂ | 7.92 | .18 | .18 | | | | | .36 | CO | 35.5 | 10.86 | 10.86 | | 10.86 |
| C ₂ H ₆ | 9.36 | Hydrox. No. | 82.7 | | | | | CH ₄ | 150.56 | 9.41 | 9.41 | 37.64 | | | | | CH ₄ | 4.0 | 1.22 | 1.22 | 4.88 | |
| C ₃ H ₈ | 3.27 | Bromine No. | 73.5 | | | | | C ₂ H ₆ | 30.90 | 1.03 | 2.06 | 6.18 | | | | | H ₂ | 57.1 | 17.47 | | 34.94 | |
| C ₄ H ₁₀ | .16 | % Fe | | | | | | C ₃ H ₈ | 15.84 | .36 | 1.08 | 2.88 | | | | | N ₂ | 1.4 | .45 | | | |
| N ₂ | .06 | % Alc | 11.1 | | | | | C ₄ H ₁₀ | 1.16 | .02 | .08 | .20 | | | | | H ₂ O | | | | 6.64 | 3.32 |
| O ₂ | | | | | | | | N ₂ | .28 | .01 | | | | | | | Total | 30.59 | 12.69 | 46.46 | 15.40 | |
| | | | | | | | | Total | 18.53 | 12.81 | 46.90 | 15.40 | | | | | | | | | | |

| | FRESH FEED | | WET GAS | | | | RECYCLE | COMB. FEED | EFFLUENT | NET CHANGE ON REACTION | | | | | | | | | | | | | | | |
|--------------------------------|------------|-------|---------|-------|---------------|---------------------|---------|------------|----------|------------------------|--------|-------|-------|--------|--------|-------|----------|--|--------|--|--------------|--|--------|--|--|
| | % | m/hr | #/hr | % | Measured m/hr | At Wt. Balance m/hr | | | | m/hr | m/hr | % | m/hr | % | Carbon | | Hydrogen | | Oxygen | | Ultimate Oil | | Unsat. | | |
| CO | 35.5 | 10.86 | 304.08 | 13.66 | 1.93 | 54.04 | 2.13 | 59.77 | 11.03 | 21.89 | 19.66 | 13.16 | 13.17 | - 8.73 | - 8.73 | 19.61 | | | | | | | | | |
| H ₂ | 57.1 | 17.47 | 34.94 | 41.97 | 5.93 | 11.86 | 6.56 | 13.12 | 33.90 | 51.37 | 46.13 | 40.46 | 40.46 | -10.91 | | | | | | | | | | | |
| CO ₂ | 2.0 | .61 | 26.84 | 20.90 | 2.95 | 29.80 | 3.26 | 143.56 | 16.88 | 17.49 | 15.71 | 20.14 | 20.15 | 2.55 | 2.55 | 24.40 | | | | | | | | | |
| N ₂ | 1.4 | .43 | 12.04 | .47 | .07 | 1.96 | .08 | 2.17 | .38 | .81 | .73 | .46 | .46 | - .35 | | | | | | | | | | | |
| CH ₄ | 4.0 | 1.22 | 34.16 | 14.51 | 2.05 | 32.80 | 2.27 | 36.28 | 11.72 | 12.94 | 11.62 | 13.99 | 14.00 | 1.05 | 1.05 | 9.87 | 4.20 | | | | | | | | |
| C ₂ H ₄ | | | | 1.83 | .26 | 7.28 | .29 | 8.05 | 1.48 | 1.48 | 1.33 | 1.77 | 1.77 | .29 | .58 | 5.34 | 1.16 | | | | | | | | |
| C ₂ H ₆ | | | | 1.44 | .20 | 6.00 | .22 | 6.64 | 1.16 | 1.16 | 1.04 | 1.38 | 1.38 | .22 | .44 | 4.05 | 1.32 | | | | | | | | |
| C ₃ H ₆ | | | | 2.03 | .29 | 12.18 | .32 | 13.47 | 1.64 | 1.64 | 1.47 | 1.96 | 1.96 | .32 | .96 | 8.84 | 1.92 | | | | | | | | |
| C ₃ H ₈ | | | | .47 | .07 | 3.08 | .08 | 3.41 | .38 | .38 | .34 | .46 | .46 | .08 | .24 | 2.21 | .64 | | | | | | | | |
| C ₄ H ₈ | | | | 1.33 | .19 | 10.64 | .21 | 11.77 | 1.07 | 1.07 | .96 | 1.28 | 1.28 | .21 | .84 | 7.73 | 1.68 | | | | | | | | |
| C ₄ H ₁₀ | | | | .43 | .06 | 3.48 | .07 | 3.85 | .35 | .35 | .31 | .42 | .42 | .07 | .28 | 2.58 | .70 | | | | | | | | |
| C ₅ H ₁₀ | | | | .68 | .10 | 7.00 | .11 | 7.74 | .55 | .55 | .49 | .66 | .66 | .11 | .55 | 5.06 | 1.10 | | | | | | | | |
| C ₆ H ₁₂ | | | | .29 | .04 | 3.36 | .04 | 3.72 | .23 | .23 | .21 | .27 | .27 | .04 | .24 | 2.21 | .48 | | | | | | | | |
| OIL | | | | | | | (12.60) | | | | .09 | .09 | | .90 | 8.29 | 1.80 | | | | | | | | | |
| WATER | | | | | | | | | | | 3.43 | 3.43 | | | | 6.82 | | | | | | | | | |
| TOTAL | | 30.60 | 412.06 | | 14.12 | 283.5 | 15.64 | 313.55 | 80.78 | 111.36 | 100.00 | 99.93 | 99.93 | 14.95 | 99.99 | | | | | | | | | | |
| H ₂ +CO | | 28.33 | | | 7.86 | | 8.79 | | | | | | | | | | | | | | | | | | |
| H ₂ /CO | | 1.61 | | | 3.07 | | 3.08 | | | | | | | | | | | | | | | | | | |

| | ULTIMATE YIELDS | | | | WEIGHT BALANCE | | | EFFLUENT RATIOS | | CONTRACTION: 48.9 | |
|------------------|-----------------|--------|--------------------------|------------------|----------------|----------------------------|-------------------|-----------------|-------|-------------------|-------|
| | % CO Fed | #/hr | H ₂ /CO #/MCF | g/M ³ | Gal/hr | H ₂ /CO Gal/MCF | cc/M ³ | Wet Gas | #/hr | % | #/hr |
| C1+C2 | 19.06 | 16.81 | 1.57 | 26.55 | | | | Wet Gas | 283.5 | | 313.5 |
| C3+ | 36.92 | 56.56 | 5.27 | 89.12 | | | | Oil | 17.9 | | 17.9 |
| C4+ | 25.87 | 39.68 | 3.69 | 62.40 | | | | Water | 80.6 | | 80.6 |
| Ult. Oil | | 51.21 | 4.77 | 80.66 | 8.61 | 0.80 | 113.04 | Total | 382.0 | 92.7 | 412.0 |
| CO ₂ | 24.40 | 116.72 | 10.87 | 183.81 | | | | | | | |
| H ₂ O | | 61.74 | 5.75 | 97.23 | | | | | | | |

Yield Calculations assume "oil" is CH₂, and is found by difference on Carbon, and H₂O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 1.47 psig. g/M³ = 16.91 X #/MCF. cc/M³ = 141.3 X gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 420 From 6/26/48 Hr. 0800 to 6/27/48 Hr. 0700

| FLOWS | | | RUN CONDITIONS | | | | DISTILLATIONS | | | | CATALYST DATA | | | | CATALYST ANALYSIS | | | | | |
|--------------|-------|------|----------------------------|--|-----|---------|---------------|------|--|--------------|---------------|--------|-------------------------------|---------------|-------------------|---------------|-------|-------|-------------|--|
| | SCFH | % | Generator Press. | | 274 | A S T M | | | | Hempel Dist. | | | | Particle Size | | | | | | |
| Oxygen | 2780 | | O ₂ Preheat, °F | | 450 | Prod. | Ray | Gas- | | °F | % | A.P.I. | Fresh Catalyst Charged | | Screen | Sedimentation | | | | |
| Nat. Gas | 4200 | | Gas Preheat, °F | | 790 | A.P.I. | 49.6 | line | | to 400 | 82.6 | 53.1 | Catalyst Recharged | | Frac. | M | % | M | % | |
| Total | 6980 | 39.8 | Reactor Press. | | 235 | I.B.P. | | | | 400-550 | 12.0 | 35.7 | Total | 484.5 | On 40 | 420+ | 0.2 | 80+ | | |
| Fresh Feed | 11550 | | Steam Back Press. | | | 5% | | | | 550+ | | | Catalyst Taken Out | 27.0 | 100 | 419-150 | 34.1 | 80-40 | | |
| F. F. by C | 11900 | | Temperatures, °F | | | 10% | | | | | | | In Reactor at End of Period | 457.5 | 150 | 149-105 | 19.7 | 40-20 | | |
| Avg. F. F. | | | Heater Outlet | | | 20 | | | | | | | | | 200 | 104-74 | 13.7 | 20-10 | | |
| Wet Gas | 5350 | | Catalyst #1 | | 630 | 30 | | | | WATER | | | | | | 250 | 73-62 | 3.2 | 10-0 | |
| Contraction | | 50.2 | #2 | | 655 | 40 | | | | Temp. | % | | Reactor d-P, H ₂ O | | 325 | 61-44 | 7.8 | | | |
| Recycle | 17740 | | #3 | | 665 | 50 | | | | 200 | | | Pounds in Reactor | | <325 | 43-0 | 21.3 | | | |
| Bleed | 13116 | | #4 | | 630 | 60 | | | | 203 | | | Density, lbs./cu. ft. | | | | | | Chem. Anal. | |
| Total | 30856 | | #5 | | 630 | 70 | | | | 208 | | | Bed Height, Feet | | | | | | | |
| Total Feed | 42406 | | Average | | | 80 | | | | | | | A.P.I. | 10.7 | | | | | | |
| Recycle/F.F. | 2.67 | | Product Separator | | | 90 | | | | | | | | | | | | | | |
| Inlet Vel. | | | | | | 95 | | | | | | | Space Vel. SCFH/lb. cat. | | | | | | | |
| Steam Flow | | | | | | E.P. | | | | | | | Inventory Figures | 92.8 | | | | | | |
| | | | | | | Rec. | | | | | | | From d-P Meters | | | | | | | |
| | | | | | | Res. | | | | | | | | | | | | | | |
| | | | | | | Loss | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

| NATURAL GAS | | PRODUCT INSPECTION | | | | | | IN | | | | | OUT | | | | | |
|--------------------------------|-------|--------------------|-------|---------|---------|----------|--|--------------------------------|-----------|-------|-------|-------|------------------|-------|-----------|-------|---|-------|
| | % | Oil | Water | Product | Pour °F | SUS @ °F | | Mol % | SCFH m/hr | C | H | O | | Mol % | SCFH m/hr | C | H | O |
| CO ₂ | 1.60 | Neut. No. 57.2 | 41.9 | | | | | O ₂ | 234.88 | 7.34 | | 14.68 | CO ₂ | 2.2 | .67 | .67 | | 1.34 |
| CH ₄ | 84.83 | Sap. No. 54.2 | 59.1 | | | | | CO ₂ | 7.92 | .18 | .18 | .36 | CO | 34.2 | 10.42 | 10.42 | | 10.42 |
| C ₂ H ₆ | 9.25 | Hydrox. No. 81.7 | | | | | | CH ₄ | 150.40 | 9.40 | 9.40 | 37.60 | CH ₄ | 4.9 | 1.49 | 1.49 | | 5.96 |
| C ₃ H ₈ | 3.88 | Bromine No. 79.5 | | | | | | C ₂ H ₆ | 30.60 | 1.02 | 2.04 | 6.12 | H ₂ | 58.3 | 17.76 | | | 35.52 |
| C ₄ H ₁₀ | .17 | % Fe | | | | | | C ₃ H ₈ | 18.92 | .43 | 1.29 | 3.44 | N ₂ | 0.4 | .12 | | | |
| N ₂ | .26 | % Alc | 12.0 | | | | | C ₄ H ₁₀ | 1.16 | .02 | .08 | .20 | H ₂ O | | | | | 6.56 |
| O ₂ | | | | | | | | N ₂ | .84 | .03 | | | Total | | | | | 15.04 |
| | | | | | | | | Total | 18.42 | 12.99 | 47.36 | 15.04 | | 30.46 | 12.58 | 48.04 | | |

| | FRESH FEED | | | | WET GAS | | | | RECYCLE | COMB. FEED | EFFLUENT | | NET CHANGE ON REACTION | | | | | | | | | | | |
|--------------------------------|------------|--------|--------|-------|----------|----------------|---------|--------|---------|------------|----------|-------|------------------------|--------|--------|-------|--|----------|--------|--------|--------------|----------------|--------|------|
| | % | m/hr | #/hr | % | Measured | At Wt. Balance | | | | | m/hr | % | m/hr | % | Carbon | | | Hydrogen | | Oxygen | Ultimate Oil | | Unsat. | |
| CO | 34.2 | 10.42 | 291.76 | 14.59 | 2.06 | 57.68 | 2.21 | 62.02 | 11.87 | 22.29 | 19.93 | 14.08 | 14.00 | - 8.21 | - 8.21 | 21.21 | | | - 8.21 | | | | | |
| H ₂ | 58.3 | 17.76 | 35.52 | 43.60 | 6.16 | 12.32 | 6.62 | 13.25 | 35.47 | 53.23 | 47.60 | 42.09 | 41.86 | -11.14 | | | | | -22.28 | | | | | |
| CO ₂ | 2.2 | .67 | 29.48 | 18.79 | 2.65 | 116.60 | 2.85 | 125.37 | 15.29 | 15.96 | 14.27 | 18.14 | 18.04 | 2.18 | 2.18 | 20.92 | | | 4.36 | | | | | |
| N ₂ | 0.4 | .12 | 3.36 | .38 | .05 | 1.40 | .05 | 1.51 | .31 | .43 | .38 | .36 | .36 | - .07 | | | | | | | | | | |
| CH ₄ | 4.9 | 1.49 | 23.84 | 15.59 | 2.20 | 35.20 | 2.37 | 37.85 | 12.68 | 14.17 | 12.67 | 15.05 | 14.97 | .88 | .88 | 8.45 | | | 3.52 | | | | | |
| C ₂ H ₆ | | | | 1.35 | .19 | 5.32 | .20 | 5.72 | 1.10 | 1.10 | .98 | 1.30 | 1.29 | .20 | .40 | 3.84 | | | .80 | | | | | |
| C ₃ H ₈ | | | | 1.37 | .19 | 5.70 | .20 | 6.13 | 1.11 | 1.11 | .99 | 1.31 | 1.30 | .20 | .40 | 3.84 | | | 1.20 | | | | | |
| C ₄ H ₁₀ | | | | 1.74 | .25 | 10.50 | .27 | 11.29 | 1.42 | 1.42 | 1.27 | 1.69 | 1.68 | .27 | .81 | 7.77 | | | 1.62 | | | 10.16 | 6.25 | 1.63 |
| C ₅ H ₁₂ | | | | .37 | .05 | 2.20 | .05 | 2.37 | .30 | .30 | .27 | .35 | .35 | .05 | .15 | 1.44 | | | .40 | | | | | |
| C ₆ H ₁₄ | | | | 1.09 | .15 | 8.40 | .16 | 9.03 | .89 | .89 | .80 | 1.05 | 1.04 | .16 | .64 | 6.14 | | | 1.28 | | | 8.58 | 6.10 | 1.41 |
| C ₇ H ₁₆ | | | | .55 | .05 | 2.90 | .05 | 3.12 | .28 | .28 | .25 | .33 | .33 | .05 | .20 | 1.92 | | | .50 | | | 3.12 | 4.86 | .64 |
| C ₈ H ₁₈ | | | | .55 | .08 | 5.60 | .09 | 6.02 | .45 | .45 | .40 | .54 | .54 | .09 | .45 | 4.32 | | | .90 | | | 6.02 | 5.40 | 1.11 |
| C ₉ H ₂₀ | | | | .23 | .03 | 2.52 | .03 | 2.71 | .19 | .19 | .17 | .22 | .22 | .05 | .18 | 1.73 | | | .36 | | | 2.71 | 5.50 | .49 |
| OIL | | | | | | | (26.88) | | | | | .19 | .19 | | 1.92 | 18.43 | | | 3.84 | | | 26.88 | 6.50 | 4.14 |
| WATER | | | | | | | | | | | | 3.85 | 3.82 | | | | | | 7.86 | | | (3.93) 3.85 | | |
| TOTAL | 30.47 | 383.96 | | 14.12 | 266.3 | 15.15 | 286.39 | 81.35 | 111.82 | 99.98 | 100.54 | 99.99 | 15.31 | | 100.01 | | | | | | | 57.47 | | 9.42 |
| H ₂ +CO | 28.18 | | | 8.22 | | 8.83 | | | | | | | | | | | | | | | | | | |
| H ₂ /CO | 1.70 | | | 2.99 | | 2.99 | | | | | | | | | | | | | | | | | | |

| | ULTIMATE YIELDS | | | | WEIGHT BALANCE | | #/hr | % | #/hr | EFFLUENT RATIOS | CONTRACTION: 50.2 | |
|--------------------------------|-----------------|-------|-------|--------|----------------|---------|--------|---|-------|----------------------------------|-------------------|----------------------------------|
| | % CO Fed | #/hr | #/MCF | g/M3 | Gal/hr | Gal/MCF | | | | | cc/M3 | H ₂ /H ₂ O |
| C ₁ +C ₂ | 16.13 | 25.86 | 2.42 | 40.92 | | | 266.3 | | 286.7 | H ₂ /H ₂ O | 10.93 | C ₀ Conversion: 78.8 |
| C ₃ + | 41.75 | 61.42 | 5.75 | 97.23 | | | 16.7 | | 16.7 | C ₀ /C ₀ | 1.29 | H ₂ Conversion: 62.7 |
| C ₄ + | 32.54 | 47.76 | 4.47 | 75.59 | | | 80.5 | | 80.5 | (H ₂)/C ₀ | 14.08 | |
| Ultr. Oil | | 57.47 | 5.38 | 90.98 | 9.42 | 0.88 | 124.34 | | | (H ₂)/C ₀ | | |
| CO ₂ | 20.92 | 95.89 | 8.98 | 151.85 | | | | | | (H ₂)/C ₀ | | |
| H ₂ O | | 69.30 | 6.49 | 109.75 | | | | | | (H ₂)/C ₀ | | |

Yield Calculations assume "oil" is CH₂, and is found by difference on Carbon, and H₂O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M3 = 16.91 × #/MCF. cc/M3 = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 42 P From 6/27/48 Hr. 0800 to 6/28/48 Hr. 0100

| FLOWS | | RUN CONDITIONS | | DISTILLATIONS | | CATALYST DATA | | CATALYST ANALYSIS | | | | | | | |
|--------------|-------|----------------------------|----------------|---------------|----------|---------------|------|-------------------------------|-------------------------------|--------|-----------------------|---------|---------------|------------------|--------------------|
| SCFH | % | Generator Press. | 275 | A S T M | | Hempel Dist. | | Particle Size | | | | | | | |
| Oxygen | 2850 | O ₂ Preheat, °F | 430 | Prod. Raw Oil | Gasoline | °F | % | A.P.I. | In Reactor at Start of Period | 457.5 | Screen | | Sedimentation | | |
| Nat. Gas | 4250 | Gas Preheat, °F | 780 | A.P.I. | 49.0 | to 400 | 76.6 | 52.5 | Fresh Catalyst Charged | | Frac. | M | % | M | % |
| Total | 7100 | 40.1 | Reactor Press. | 245 | I.B.P. | 400-550 | 15.6 | 36.1 | Catalyst Recharged | | On 40 | 420+ | 0.8 | 80+ | |
| Fresh Feed | 12300 | Steam Back Press. | 5% | | 110 | 550+ | | | Total | 457.5 | 100 | 419-150 | 65.9 | 80-40 | |
| F. F. by C | 12400 | Temperatures, °F | 10% | 150 | | | | | Catalyst Taken Out | 5.75 | 150 | 149-105 | 22.6 | 40-20 | |
| Avg. F. F. | | Heater Outlet | 20 | 170 | | | | | In Reactor at End of Period | 451.75 | 200 | 104-74 | 6.5 | 20-10 | |
| Wet Gas | 5720 | Catalyst #1 | 630 | 30 | 208 | WATER | | | | | 250 | 73-62 | 1.2 | 10-0 | |
| Contraction | 49.8 | #2 | 655 | 40 | 228 | Temp. | % | Reactor d-P, H ₂ O | | | 325 | 61-44 | 1.8 | | |
| Recycle | 17580 | #3 | 660 | 50 | 248 | 200 | | Pounds in Reactor | | | < 325 | 43-0 | 1.2 | | |
| Bleed | 13093 | #4 | 630 | 60 | 268 | 203 | | Density, lbs./cu. ft. | | | Density, lbs./cu. ft. | | Chem. Anal. | | |
| | | #5 | | 70 | 292 | 208 | | Bed Height, Feet | | | Aerated | 120.0 | | % Fe | |
| Total | 30673 | Average | | 80 | 319 | A.P.I. | 10.6 | | | | Settled | 121.0 | | % C | |
| Total Feed | 42973 | Product Separator | | 90 | 352 | | | | | | Compacted | 128.0 | | % Oil | |
| Recycle/F.F. | 2.49 | | | 95 | 376 | | | Space Vel. SCFH/lb. cat. | | | Sp. Grav. | 3.5 | | Specific Surface | |
| Inlet Vel. | | | | E.P. | 400 | | | Inventory Figures | 95.1 | | | | | 13.3 | m ² /gm |
| Steam Flow | | | | Rec. | 98.0 | | | From d-P Meters | | | | | | | |
| | | | | Res. | 1.0 | | | | | | | | | | |
| | | | | Loss. | 1.0 | | | | | | | | | | |

| NATURAL GAS | | PRODUCT INSPECTION | | | | | | IN | | | | OUT | | | | | |
|--------------------------------|-------|--------------------|-------|---------|---------|----------|--------------------------------|-----------|-------|-------|-------|------------------|-----------|-------|-------|-------|------|
| % | | Oil | Water | Product | Pour °F | SUS @ °F | Mol % | SCFH m/hr | C | H | O | Mol % | SCFH m/hr | C | H | O | |
| CO ₂ | 1.60 | Neut. No. | 76.9 | 42.7 | | | O ₂ | 240.64 | 7.52 | | 15.04 | CO ₂ | 2.2 | .71 | .71 | 1.42 | |
| CH ₄ | 84.83 | Sap. No. | 77.6 | 39.1 | | | CO ₂ | 7.92 | .18 | .18 | .36 | CO | 34.2 | 11.10 | 11.10 | 11.10 | |
| C ₂ H ₆ | 9.26 | Hydrox. No. | 85.8 | | | | CH ₄ | 152.16 | 9.51 | 9.51 | 38.04 | CH ₄ | 3.9 | 1.27 | 1.27 | 5.08 | |
| C ₃ H ₈ | 3.88 | Bromine No. | 73.4 | | | | C ₂ H ₆ | 31.20 | 1.04 | 2.08 | 6.24 | H ₂ | 58.9 | 19.11 | | 38.22 | |
| C ₄ H ₁₀ | .17 | % Fe | | | | | C ₃ H ₈ | 18.92 | .43 | 1.29 | 3.44 | N ₂ | 0.8 | .26 | | | |
| N ₂ | .26 | % Alc | 11.1 | | | | C ₄ H ₁₀ | 1.16 | .02 | .08 | .20 | H ₂ O | | | | 5.76 | 2.98 |
| O ₂ | | | | | | | N ₂ | .84 | .05 | | | Total | 32.45 | 13.08 | 49.06 | 15.40 | |
| | | | | | | | Total | 18.75 | 13.14 | 47.92 | 15.40 | | | | | | |

| FRESH FEED | | WET GAS | | | | RECYCLE | COMB. FEED | EFFLUENT | | NET CHANGE ON REACTION | | | | | | | | | | | | | | |
|--------------------------------|-------|---------|--------|----------|----------------|---------|------------|----------|-------|------------------------|--------|--------|--------|----------|--------|--------|--------------|-------|--------|---|-------|--------|------|------|
| % | m/hr | #/hr | % | Measured | At Wt. Balance | m/hr | m/hr | % | m/hr | % | Carbon | | | Hydrogen | | Oxygen | Ultimate Oil | | Unsat. | | | | | |
| | | | | m/hr | #/hr | m/hr | #/hr | | | | m/hr | a/hr | % | a/hr | % | a/hr | #/hr | #/gal | gal/hr | % | | | | |
| CO | 34.2 | 11.10 | 310.90 | 14.39 | 2.17 | 60.76 | 2.34 | 65.58 | 11.63 | 22.73 | 20.07 | 13.97 | 13.88 | - 8.76 | - 8.76 | 21.08 | | | | | | | | |
| H ₂ | 58.9 | 19.11 | 38.22 | 45.82 | 6.61 | 13.22 | 7.13 | 14.27 | 55.41 | 54.52 | 48.14 | 42.54 | 42.09 | -11.98 | | -23.96 | | | | | | | | |
| CO ₂ | 2.2 | .71 | 31.24 | 19.47 | 2.94 | 129.36 | 3.17 | 139.62 | 15.73 | 16.44 | 14.52 | 18.90 | 18.70 | 2.46 | 2.46 | 22.16 | | | | | 4.92 | | | |
| N ₂ | 0.8 | .26 | 7.28 | .65 | .10 | 2.80 | .11 | 3.02 | .58 | .79 | .70 | .64 | .65 | - .15 | | | | | | | | | | |
| CH ₄ | 3.9 | 1.27 | 20.32 | 13.98 | 2.11 | 33.76 | 2.28 | 36.44 | 11.30 | 12.57 | 11.10 | 13.58 | 13.44 | 1.01 | 1.01 | 9.10 | 4.04 | | | | | | | |
| C ₂ H ₄ | | | | 1.45 | .22 | 6.16 | .24 | 6.65 | 1.17 | 1.17 | 1.03 | 1.41 | 1.40 | .24 | .48 | 4.32 | .96 | | | | | | | |
| C ₂ H ₆ | | | | 1.55 | .23 | 6.90 | .25 | 7.45 | 1.25 | 1.25 | 1.10 | 1.50 | 1.48 | .25 | .50 | 4.50 | 1.50 | | | | | | | |
| C ₃ H ₆ | | | | 1.86 | .28 | 11.76 | .30 | 12.69 | 1.50 | 1.50 | 1.32 | 1.80 | 1.78 | .30 | .90 | 8.11 | 1.80 | | | | 11.42 | 6.25 | 1.83 | |
| C ₃ H ₈ | | | | .55 | .08 | 3.52 | .09 | 3.90 | .44 | .44 | .38 | .53 | .52 | .08 | .27 | 2.43 | .72 | | | | | | | |
| C ₄ H ₈ | | | | .98 | .15 | 8.40 | .16 | 9.07 | .79 | .79 | .70 | .95 | .94 | .15 | .64 | 5.77 | 1.28 | | | | | 8.62 | 6.10 | 1.41 |
| C ₄ H ₁₀ | | | | .42 | .06 | 3.48 | .06 | 3.76 | .34 | .34 | .30 | .40 | .40 | .06 | .24 | 2.16 | .60 | | | | | 3.76 | 4.86 | .77 |
| C ₅ H ₁₀ | | | | .64 | .10 | 7.00 | .11 | 7.56 | .52 | .52 | .46 | .63 | .62 | .11 | .55 | 4.95 | 1.10 | | | | | 7.56 | 5.40 | 1.40 |
| C ₆ H ₁₂ | | | | .24 | .04 | 3.36 | .04 | 3.63 | .19 | .19 | .17 | .23 | .23 | .04 | .24 | 2.16 | .48 | | | | | 3.63 | 5.50 | .66 |
| OIL | | | | | | | | (20.58) | | | | .15 | .15 | | 1.47 | 13.24 | 2.94 | | | | | 20.56 | 6.50 | 5.17 |
| WATER | | | | | | | | | | | | 3.84 | 3.80 | | | | 8.54 | | | | | (4.27) | 3.64 | |
| TOTAL | 32.46 | 407.86 | | 15.09 | 290.5 | 16.28 | 313.54 | | 80.80 | 113.25 | 100.00 | 101.07 | 100.00 | 16.17 | | 99.98 | | | | | | 55.57 | | 9.24 |
| H ₂ +CO | 30.21 | | | | 8.78 | | 9.47 | | | | | | | | | | | | | | | | | |
| H ₂ /CO | 1.72 | | | | 3.05 | | 3.05 | | | | | | | | | | | | | | | | | |

| ULTIMATE YIELDS | | | | WEIGHT BALANCE | | EFFLUENT RATIOS | | CONTRACTION: 49.8 | |
|------------------|-------|--------------------|--------------------|----------------|---------|-------------------|---------|-------------------|-------|
| % | #/hr | H ₂ /CO | H ₂ /CO | #/hr | % | #/hr | | | |
| CO Fed | #/hr | #/MCF | g/M ³ | Gal/hr | Gal/MCF | cc/M ³ | Wet Gas | Oil | Water |
| C1+C2 | 17.92 | 30.22 | 2.64 | 44.64 | | | 290.5 | 14.8 | 79.2 |
| C3+ | 38.82 | 61.09 | 5.34 | 90.30 | | | 313.9 | 14.8 | 79.2 |
| C4+ | 28.28 | 44.60 | 3.90 | 65.95 | | | | | |
| Ult. Oil | 55.57 | 4.85 | 82.01 | 9.24 | 0.81 | 114.45 | | | |
| CO ₂ | 22.16 | 108.36 | 9.47 | 160.14 | | | | | |
| H ₂ O | 69.12 | 6.04 | 102.14 | | | | | | |

Yield Calculations assume "oil" is CH₂, and is found by difference on Carbon, and H₂O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M³ = 16.91 × #/MCF. cc/M³ = 141.3 × gal/MCF.

SUMMARY OF YIELDS* OF RUN NO. 42
ON BASIS TO BE USED IN FORTHCOMING REPORTS

| Period | C ₃ -C ₆ in Gas | | Recovered Oil | | W.S. Chemicals | | Total | |
|--------|---------------------------------------|---------|---------------|---------|----------------|---------|-------|---------|
| | #/MCF | Gal/MCF | #/MCF | Gal/MCF | #/MCF | Gal/MCF | #/MCF | Gal/MCF |
| A | 3.09 | 0.648 | 4.16 | 0.621 | 0.63 | 0.079 | 7.88 | 1.349 |
| B | 3.32 | 0.690 | 3.61 | 0.543 | 0.77 | 0.097 | 7.71 | 1.340 |
| C | 3.51 | 0.720 | 3.20 | 0.478 | 0.90 | 0.087 | 7.40 | 1.285 |
| D | 3.26 | 0.670 | 2.84 | 0.427 | 0.71 | 0.089 | 6.81 | 1.186 |
| E | 3.18 | 0.653 | 2.28 | 0.344 | 0.74 | 0.093 | 6.20 | 1.090 |
| F | 3.56 | 0.735 | 2.76 | 0.418 | 0.60 | 0.075 | 6.92 | 1.228 |
| G | 3.94 | 0.817 | 2.07 | 0.318 | 0.98 | 0.122 | 6.99 | 1.258 |
| H | 3.86 | 0.804 | 1.97 | 0.304 | 1.06 | 0.133 | 6.89 | 1.241 |
| I | 4.61 | 0.951 | 1.83 | 0.279 | 0.62 | 0.079 | 7.06 | 1.309 |
| J | 3.86 | 0.805 | 1.77 | 0.270 | 0.78 | 0.097 | 6.41 | 1.172 |
| K | 3.64 | 0.760 | 1.87 | 0.288 | 0.76 | 0.096 | 6.27 | 1.144 |
| L | 3.44 | 0.717 | 1.29 | 0.198 | 0.60 | 0.074 | 5.33 | 0.990 |
| M | 3.54 | 0.734 | 2.03 | 0.308 | 0.99 | 0.124 | 6.56 | 1.166 |
| N | 4.09 | 0.855 | 1.67 | 0.256 | 0.83 | 0.104 | 6.59 | 1.215 |
| O | 3.23 | 0.670 | 1.56 | 0.146 | 0.91 | 0.113 | 5.70 | 0.929 |

*Yields of recovered oil and chemicals are measured. C₃-C₆ yields are adjusted by forcing wet gas figures to make 100 per cent weight recovery on reactor.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 43 A From 7-16-48 Hr. 0800 to 7-17-48 Hr. 0700

| FLOWS | | RUN CONDITIONS | | | DISTILLATIONS | | | CATALYST DATA | | | CATALYST ANALYSIS | | | | | | |
|--------------|-------|----------------------------|-----|---------------|---------------|--------------|----------|-------------------------------|-------------------------------|--|-------------------|-----------------------|---------|------|-------------|------------------|-------------------|
| Oxygen | 5440 | Generator Press. | 275 | A S T M | | Hempel Dist. | | In Reactor at Start of Period | | | Particle Size | | | | | | |
| Nat. Gas | 7950 | O ₂ Preheat, °F | 380 | Prod. Raw Oil | Gasoline | °F | % A.P.I. | Fresh Catalyst Charged | | | Screen | | | | | | |
| Total | 13290 | Gas Preheat, °F | 710 | A.P.I. | 42.6 | to 400 | 51.6 | 50.5 | Catalyst Recharged | | | Sedimentation | | | | | |
| Fresh Feed | 22800 | Reactor Press. | 250 | I.B.P. | 126 | 400-550 | 29.6 | 36.0 | Total | | | On 40 | 420+ | 15.6 | 80+ | | |
| F.F. by C | 21500 | Steam Back Press. | | | | 550+ | 8.8 | | Catalyst Taken Out | | | 100 | 419-150 | 36.6 | 80-40 | | |
| Avg. F.F. | | Temperatures, °F | | | | 10% | | | In Reactor at End of Period | | | 150 | 149-105 | 9.0 | 40-20 | | |
| Wet Gas | 14200 | Heater Outlet | | | | 20 | | | WATER | | | 200 | 104-74 | 9.2 | 20-10 | | |
| Contraction | | Catalyst #1 | 645 | | 30 | 230 | | | Reactor d-P, H ₂ O | | | 250 | 73-62 | 3.4 | 10-0 | | |
| Recycle | 14730 | #2 | 650 | | 40 | 250 | | | Pounds in Reactor | | | 325 | 61-44 | 7.8 | | | |
| Bleed | 5522 | #3 | 660 | | 50 | 270 | | | Density, lbs./cu. ft. | | | <325 | 43-0 | 18.2 | | | |
| Total | 20252 | #4 | 650 | | 60 | 290 | | | Bed Height, Feet | | | Density, lbs./cu. ft. | | | Chem. Anal. | | |
| Total Feed | 43052 | #5 | | | 70 | 310 | | | Average | | | Aerated | | | 189.0 | % Fe | |
| Recycle/F.F. | 0.89 | Average | | | 80 | 335 | | | A.P.I. | | | Settled | | | 191.0 | % C | |
| Inlet Vel. | | Product Separator | | | 90 | 366 | | | Space Vel. SCFH/lb. cat. | | | Compacted | | | 207.0 | % Oil | |
| Steam Flow | | | | | 95 | 396 | | | Inventory Figures | | | Sp. Grav. | | | 5.2 | Specific Surface | |
| | | | | | | 415 | | | From d-P Meters | | | | | | 54.07 | 9.7 | m ² gm |
| | | | | | | 98.0 | | | Res. | | | | | | 1.0 | | |
| | | | | | | 1.0 | | | Loss | | | | | | 1.0 | | |

GENERATOR ELEMENTAL BALANCE

| NATURAL GAS | | PRODUCT INSPECTION | | | | | IN | | | | | OUT | | | | | | |
|--------------------------------|-------|--------------------|-------|---------|---------|----------|--------------------------------|--------|-----------|-------|-------|-------|------------------|-------|-----------|-------|---|-------|
| | % | Oil | Water | Product | Pour °F | SUS @ °F | | Mol % | SCFH m/hr | C | H | O | | Mol % | SCFH m/hr | C | H | O |
| CO ₂ | 1.51 | Neut. No. | 47.7 | 36.7 | | | O ₂ | 459.20 | 14.35 | | | 28.70 | CO ₂ | 2.1 | 1.26 | 1.26 | | 2.52 |
| CH ₄ | 82.07 | Sap. No. | 50.4 | 22.2 | | | CO | 13.64 | .31 | .31 | | .62 | CO | 38.4 | 23.10 | 23.10 | | 23.10 |
| C ₂ H ₆ | 11.38 | Hydrox. No. | 54.3 | | | | CH ₄ | 272.00 | 17.00 | 17.00 | 68.00 | | CH ₄ | 4.1 | 2.47 | 2.47 | | 9.88 |
| C ₃ H ₈ | 4.80 | Bromine No. | 72.6 | | | | C ₂ H ₆ | 70.80 | 2.36 | 4.72 | 14.16 | | H ₂ | 55.4 | 33.33 | | | 66.66 |
| C ₄ H ₁₀ | .25 | % Fe | | | | | C ₃ H ₈ | 43.56 | .99 | 2.97 | 7.92 | | N ₂ | | | | | |
| N ₂ | | % Alc | 6.1 | | | | C ₄ H ₁₀ | 2.90 | .05 | .20 | .50 | | H ₂ O | | | | | 7.40 |
| O ₂ | | | | | | | N ₂ | | | | | | Total | | | | | 60.16 |
| | | | | | | | Total | | | | | | | | | | | 26.83 |
| | | | | | | | | | | | | | | | | | | 83.94 |
| | | | | | | | | | | | | | | | | | | 29.32 |

| FRESH FEED | | | | WET GAS | | | | RECYCLE | COMB. FEED | EFFLUENT | | NET CHANGE ON REACTION | | | | | | | | | | |
|--------------------------------|------|-------|--------|---------------|---------------------|--------|-------|---------|------------|----------|--------|------------------------|--------|--------|--------|----------|------|--------|--------------|--------|--------|------|
| % | m/hr | #/hr | % | Measured m/hr | At Wt. Balance #/hr | m/hr | #/hr | m/hr | m/hr | % | m/hr | % | Carbon | | | Hydrogen | | Oxygen | Ultimate Oil | | Unsat. | |
| CO | 38.4 | 23.10 | 646.80 | 17.77 | 6.66 | 186.48 | 7.29 | 204.09 | 9.51 | 32.61 | 28.68 | 16.80 | 16.82 | -15.81 | -15.81 | 31.56 | | | -15.81 | | | |
| H ₂ | 55.4 | 35.33 | 66.66 | 52.76 | 19.77 | 39.54 | 21.84 | 45.27 | 28.25 | 61.58 | 54.16 | 49.89 | 49.94 | -11.69 | | | | | | | | |
| CO ₂ | 2.1 | 1.26 | 55.44 | 16.46 | 6.17 | 271.46 | 6.75 | 297.12 | 8.81 | 10.07 | 8.86 | 15.56 | 15.58 | 5.46 | 5.46 | 23.64 | | | 10.92 | | | |
| N ₂ | - | - | - | .19 | .07 | 1.96 | .08 | 2.15 | .10 | .10 | .09 | .18 | .18 | .08 | | | | | | | | |
| CH ₄ | 4.1 | 2.47 | 39.52 | 9.41 | 3.53 | 56.48 | 3.86 | 61.82 | 5.04 | 7.51 | 6.61 | 8.90 | 8.91 | 1.39 | 1.39 | 6.02 | 5.56 | | | | | |
| C ₂ H ₆ | | | | .82 | .31 | 8.68 | .34 | 9.50 | .44 | .44 | .39 | .78 | .78 | .34 | .68 | 2.94 | 1.36 | | | | | |
| C ₂ H ₆ | | | | .47 | .18 | 5.40 | .20 | 5.91 | .25 | .25 | .22 | .45 | .45 | .20 | .40 | 1.73 | 1.20 | | | | | |
| C ₃ H ₈ | | | | .65 | .24 | 110.08 | .26 | 11.03 | .35 | .35 | .31 | .61 | .61 | .26 | .78 | 3.38 | 1.56 | | | 9.93 | 6.25 | 1.59 |
| C ₃ H ₈ | | | | .08 | .03 | 1.32 | .03 | 1.44 | .04 | .04 | .04 | .07 | .07 | .03 | .09 | .39 | .24 | | | | | |
| C ₄ H ₁₀ | | | | .56 | .21 | 11.76 | .23 | 12.87 | .30 | .30 | .26 | .53 | .53 | .23 | .92 | 3.98 | 1.84 | | | 12.23 | 6.10 | 2.00 |
| C ₄ H ₁₀ | | | | .29 | .11 | 6.36 | .12 | 6.98 | .16 | .16 | .14 | .28 | .28 | .12 | .48 | 2.08 | 1.20 | | | 6.98 | 4.86 | 1.44 |
| C ₅ H ₁₂ | | | | .37 | .14 | 9.80 | .15 | 10.73 | .20 | .20 | .18 | .35 | .35 | .15 | .75 | 3.25 | 1.50 | | | 10.73 | 5.40 | 1.99 |
| C ₆ H ₁₄ | | | | .17 | .06 | 5.04 | .07 | 5.52 | .09 | .09 | .08 | .16 | .16 | .07 | .42 | 1.82 | .84 | | | 5.52 | 5.50 | 1.00 |
| OIL | | | | | | | | (62.16) | | | | .44 | .44 | | 4.44 | 19.22 | 8.88 | | | 62.16 | 6.50 | 9.56 |
| WATER | | | | | | | | | | | | 4.89 | 4.90 | | | | .20 | | | 4.89 | | |
| TOTAL | | 60.16 | 808.42 | | 37.47 | 614.40 | 41.02 | 672.43 | 53.54 | 113.70 | 100.01 | 99.89 | 100.00 | 19.17 | 100.01 | | | | | 107.55 | 17.58 | |
| H ₂ +CO | | 56.43 | | | 26.43 | | 28.93 | | | | | | | | | | | | | | | |
| H ₂ /CO | | 1.44 | | | 2.97 | | 2.97 | | | | | | | | | | | | | | | |

Yield Calculations assume "oil" is CH₂, and is found by difference on Carbon, and H₂ by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M³ = 16.91 × #/MCF. cc/M³ = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 43 B From 7-17-48 Hr. 0800 to 7-18-48 Hr. 0700

| FLOWS | | RUN CONDITIONS | | DISTILLATIONS | | | CATALYST DATA | | CATALYST ANALYSIS | | | | | | | | | |
|--------------|-------|----------------------------|-----|---------------|-------------------|--|---------------|------|-------------------------------|-----------------------------|--|---------------|-----------|--|--|--------------------|--|--|
| Oxygen | 5500 | Generator Press. | 280 | A S T M | | | Hempel Dist. | | In Reactor at Start of Period | | | | | | | | | |
| Nat. Gas | 8050 | O ₂ Preheat, °F | 420 | Prod. | Raw Gaso-Oil line | | °F | % | A.P.I. | Fresh Catalyst Charged | | | | | | | | |
| Total | 13550 | Gas Preheat, °F | 790 | A.P.I. | 43.0 | | to 400 | 66.3 | 49.4 | Catalyst Recharged | | | | | | | | |
| Fresh Feed | 24200 | Reactor Press. | 250 | I.B.P. | 130 | | 400-550 | 26.6 | 34.1 | Total | | | | | | | | |
| F.F. by C | 24500 | Steam Back Press. | | | | | 550+ | 7.8 | | Catalyst Taken Out | | | | | | | | |
| Avg. F.F. | | Temperatures, °F | | | | | | | | In Reactor at End of Period | | | | | | | | |
| Wet Gas | 14100 | Heater Outlet | | | | | | | | Particle Size | | | | | | | | |
| Contraction | 33.7 | Catalyst #1 | 650 | 30 | 232 | | WATER | | | Screen | | | | | | | | |
| Recycle | 14580 | #2 | 660 | 40 | 252 | | Temp. | % | Reactor d-P, H ₂ O | | | Sedimentation | | | | | | |
| Bleed | 5004 | #3 | 665 | 50 | 272 | | 200 | | Pounds in Reactor | | | | | | | | | |
| Total | 19584 | #4 | 650 | 60 | 290 | | 203 | | Density, lbs./cu. ft. | | | Chem. Anal. | | | | | | |
| Total Feed | 43784 | #5 | | 70 | 312 | | 208 | | Bed Height, Feet | | | | | | | | | |
| Recycle/F.F. | 0.81 | Average | | 80 | 336 | | A.P.I. | | | Aerated | | | % Fe | | | | | |
| Inlet Vel. | | Product Separator | | 90 | 366 | | 10.2 | | | Settled | | | % C | | | | | |
| Steam Flow | | | | 95 | 390 | | | | | Compacted | | | % Oil | | | | | |
| | | | | E.P. | 410 | | | | | Space Vel. SCFH/lb. cat. | | | Sp. Grav. | | | Specific Surface | | |
| | | | | Rec. | 98.0 | | | | | Inventory Figures | | | 14.0 | | | m ² /gm | | |
| | | | | Res. | 1.0 | | | | | From d-P Meters | | | | | | | | |
| | | | | Loss | 1.0 | | | | | | | | | | | | | |

| NATURAL GAS | | PRODUCT INSPECTION | | | | | | IN | | | | | OUT | | | | | |
|--------------------------------|-------|--------------------|-------|---------|---------|----------|--|--------------------------------|-----------|-------|-------|-------|------------------|-------|-----------|-------|---|-------|
| % | | Oil | Water | Product | Pour °F | SUS @ °F | | Mol % | SCFH m/hr | C | H | O | | Mol % | SCFH m/hr | C | H | O |
| CO ₂ | 1.73 | Neut No. | 51.0 | 39.0 | | | | O ₂ | 464.32 | 14.61 | | 29.02 | CO ₂ | 2.1 | 1.84 | 1.34 | | 2.68 |
| CH ₄ | 83.75 | Sap. No. | 52.9 | 40.4 | | | | CO ₂ | 16.28 | .37 | .37 | .74 | CO | 35.7 | 22.79 | 22.79 | | 22.79 |
| C ₂ H ₆ | 10.29 | Hydrox. No. | 20.6 | | | | | CH ₄ | 284.64 | 17.79 | 17.79 | 71.16 | CH ₄ | 4.6 | 2.94 | 2.94 | | 11.76 |
| C ₃ H ₈ | 4.04 | Bromine No. | 72.2 | | | | | C ₂ H ₆ | 65.70 | 2.19 | 4.38 | 13.14 | H ₂ | 57.4 | 36.65 | | | 73.30 |
| C ₄ H ₁₀ | | % Fe | | | | | | C ₃ H ₈ | 37.84 | .86 | 2.58 | 6.88 | N ₂ | 0.1 | .06 | | | |
| N ₂ | | % A | | 8.3 | | | | C ₄ H ₁₀ | 2.32 | .04 | .16 | .40 | H ₂ O | | | | | 8.38 |
| O ₂ | | | | | | | | N ₂ | | | | | Total | | | | | 63.78 |
| | | | | | | | | Total | 35.76 | 25.28 | 91.58 | 29.76 | | | | | | 27.07 |
| | | | | | | | | | | | | | | | | | | 93.44 |
| | | | | | | | | | | | | | | | | | | 29.76 |

| | FRESH FEED | | WET GAS | | | | RECYCLE | COMB. FEED | EFFLUENT | | NET CHANGE ON REACTION | | | | | | | | | | | |
|--------------------------------|------------|-------|---------|-------|----------|----------------|---------|------------|----------|--------|------------------------|-------|-------|--------|--------|-------|----------|------|--------|--------------|------|--------|
| | % | m/hr | #/hr | % | Measured | At Wt. Balance | | | m/hr | m/hr | % | m/hr | % | Carbon | | | Hydrogen | | Oxygen | Ultimate Oil | | Unsat. |
| | | | | | m/hr | #/hr | m/hr | #/hr | | | | m/hr | a/hr | % | a/hr | % | a/hr | #/hr | #/gal | gal/hr | % | |
| CO | 35.7 | 22.79 | 638.12 | 15.61 | 5.80 | 162.40 | 6.59 | 184.58 | 8.07 | 30.86 | 26.72 | 14.66 | 14.85 | -16.20 | -16.20 | 28.92 | | | | | | |
| H ₂ | 57.4 | 36.65 | 73.30 | 52.34 | 19.47 | 38.94 | 22.13 | 44.26 | 27.07 | 63.72 | 55.17 | 49.20 | 49.85 | -14.52 | | 29.04 | | | | | | |
| CO ₂ | 2.1 | 1.34 | 58.96 | 17.14 | 6.38 | 280.72 | 7.25 | 319.06 | 8.86 | 10.20 | 8.83 | 16.11 | 16.32 | 5.91 | 5.91 | 25.93 | | | | | | |
| N ₂ | 0.1 | .06 | 1.68 | .24 | .09 | 2.52 | .10 | 2.86 | .12 | .18 | .16 | .22 | .22 | .04 | | | | | | | | |
| CH ₄ | 4.6 | 2.94 | 47.04 | 10.63 | 3.95 | 63.20 | 4.49 | 71.83 | 5.50 | 8.44 | 7.31 | 9.99 | 10.12 | 1.55 | 1.55 | 6.80 | 6.20 | | | | | |
| C ₂ H ₆ | | | | 1.06 | .39 | 10.92 | .44 | 12.41 | .55 | .55 | .48 | .99 | 1.00 | .44 | .88 | 3.86 | 1.76 | | | | | |
| C ₃ H ₈ | | | | .53 | .20 | 6.00 | .23 | 6.82 | .27 | .27 | .23 | .50 | .51 | .23 | .46 | 2.02 | 1.38 | | | | | |
| C ₄ H ₁₀ | | | | .82 | .31 | 13.02 | .35 | 14.80 | .42 | .42 | .36 | .77 | .78 | .35 | 1.05 | 4.61 | 2.10 | | | 13.32 | 6.25 | 2.13 |
| C ₂ H ₄ | | | | .08 | .03 | 1.32 | .03 | 1.50 | .04 | .04 | .03 | .07 | .07 | .03 | .09 | .39 | .24 | | | | | |
| C ₃ H ₆ | | | | .65 | .24 | 13.44 | .27 | 15.28 | .34 | .34 | .29 | .61 | .62 | .27 | 1.08 | 4.74 | 2.16 | | | 14.52 | 6.10 | 2.38 |
| C ₄ H ₈ | | | | .27 | .10 | 5.80 | .11 | 6.59 | .14 | .14 | .12 | .25 | .25 | .11 | .44 | 1.93 | 1.10 | | | 6.59 | 4.86 | 1.36 |
| C ₅ H ₁₀ | | | | .44 | .16 | 11.20 | .18 | 12.73 | .23 | .23 | .20 | .41 | .42 | .18 | .90 | 3.95 | 1.80 | | | 12.73 | 5.40 | 2.36 |
| C ₆ H ₁₂ | | | | .19 | .07 | 5.88 | .08 | 6.68 | .10 | .10 | .09 | .18 | .18 | .08 | .48 | 2.11 | .96 | | | 6.68 | 5.50 | 1.21 |
| OIL | | | | | | | (47.04) | | | | | .34 | .34 | | 3.36 | 14.74 | 6.72 | | | 47.04 | 6.50 | 7.24 |
| WATER | | | | | | | | | | | | 4.38 | 4.44 | | | | 4.82 | | | (2.31) | 4.38 | |
| TOTAL | | 63.85 | 819.10 | | 37.20 | 615.36 | 42.25 | 699.40 | 51.72 | 115.49 | 99.99 | 98.68 | 99.97 | 21.53 | 100.00 | | | | | 100.88 | | 16.68 |
| H ₂ +CO | | 59.44 | | | 25.27 | | 28.72 | | | | | | | | | | | | | | | |
| H ₂ /CO | | 1.61 | | | 3.36 | | 3.36 | | | | | | | | | | | | | | | |

| | ULTIMATE YIELDS | | | | WEIGHT BALANCE | | | EFFLUENT RATIOS | | CONTRACTION: 33.7 | |
|------------------|-----------------|--------|--------------------------|------------------|----------------|----------------------------|-------------------|-----------------|-------|-------------------|-------|
| | % CO Fed | #/hr | H ₂ /CO #/MCF | g/M ³ | Gal/hr | H ₂ /CO Gal/MCF | cc/M ³ | #/hr | % | #/hr | % |
| C1+C2 | 12.68 | 44.02 | 1.95 | 32.97 | | | | Wet Gas | 615.4 | | 699.0 |
| C3+ | 32.47 | 104.62 | 4.64 | 78.46 | | | | Oil | 37.8 | | 37.8 |
| C4+ | 27.47 | 88.32 | 3.92 | 66.29 | | | | Water | 82.5 | | 82.5 |
| Ult. Oil | | 100.88 | 4.48 | 75.76 | 16.68 | 0.74 | 104.56 | Total | 755.5 | 89.9 | 819.1 |
| CO ₂ | 25.93 | 260.10 | 11.54 | 195.14 | | | | | | | |
| H ₂ O | | 78.84 | 3.50 | 59.19 | | | | | | | |

Yield Calculations assume "oil" is CH₂, and is found by difference on Carbon, and H₂O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M³ = 16.91 × #/MCF cc/M³ = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 43 C From 7-18-48 Hr. 0800 to 7-19-48 Hr. 0700

| FLOWS | | RUN CONDITIONS | | DISTILLATIONS | | | | CATALYST DATA | | CATALYST ANALYSIS | | | | | | | |
|--------------|-------|----------------------------|----------------|---------------|-------------------|------|--|---------------|------|-------------------|-------------------------------|--------|--------|-----------|-------|------------------|--------------------|
| SCFH | % | Generator Press. | 285 | A S T M | | | | Hempel Dist. | | Particle Size | | | | | | | |
| Oxygen | 5500 | O ₂ Preheat, °F | 440 | Prod. | REV G880-011 line | | | °F | % | A.P.I. | In Reactor at Start of Period | 698.75 | Screen | | | | |
| Nat. Gas | 8050 | Gas Preheat, °F | 750 | A.P.I. | 41.8 | | | to 400 | 62.6 | 49.2 | Fresh Catalyst Charged | 122.0 | Frac. | M | % | | |
| Total | 13550 | 40.6 | Reactor Press. | 250 | I.B.P. | 126 | | 400-550 | 24.3 | 34.6 | Catalyst Recharged | | On 40 | 420+ | 11.5 | 80+ | |
| Fresh Feed | 24400 | Steam Back Press. | | 5% | | | | 550+ | 13.1 | | Total | 820.75 | 100 | 419-150 | 42.5 | 80-40 | |
| F.F. by C | 22200 | Temperatures, °F | | 10% | | 162 | | | | | Catalyst Taken Out | 125.0 | 150 | 149-105 | 8.7 | 40-20 | |
| Avg. F. F. | | Heater Outlet | | 20 | | 204 | | | | | In Reactor at End of Period | 695.75 | 200 | 104-74 | 8.7 | 20-10 | |
| Wet Gas | 15100 | Catalyst #1 | 645 | 30 | | 228 | | WATER | | | | 250 | 73-62 | 4.2 | 10-0 | | |
| Contraction | | #2 | 655 | 40 | | 248 | | Temp. | % | | Reactor d.P. H ₂ O | | 325 | 61-44 | 12.7 | | |
| Recycle | 14580 | #3 | 670 | 50 | | 268 | | 200 | | | Pounds in Reactor | <325 | 43-0 | 11.7 | | | |
| Bleed | 5141 | #4 | 650 | 60 | | 288 | | 203 | | | Density, lbs./cu. ft. | | | | | Chem. Anal. | |
| | | #5 | | 70 | | 308 | | 208 | | | Bed Height, Feet | | | | | | |
| Total | 19721 | Average | | 80 | | 328 | | A.P.I. | 10.2 | | | | | Aerated | 152.0 | % Fe | |
| Total Feed | 44121 | Product Separator | | 90 | | 356 | | | | | | | | Settled | 156.0 | % C | |
| Recycle/F.F. | 0.81 | | | 95 | | 382 | | | | | Space Vel. SCFH/lb. cat. | | | Compacted | 179.0 | % Oil | |
| Inlet Vel. | | | | E.P. | | 396 | | | | | Inventory Figures | 65.42 | | Sp. Grav. | 4.1 | Specific Surface | |
| Steam Flow | | | | Rec | | 98.0 | | | | | From d-P Meters | | | | | 19.7 | m ² /gm |
| | | | | Res. | | 1.0 | | | | | | | | | | | |
| | | | | Loss | | 1.0 | | | | | | | | | | | |

| NATURAL GAS | | PRODUCT INSPECTION | | | | | | IN | | | | OUT | | | | | | | | | | | |
|--------------------------------|-------|--------------------|-------|---------|---------|----------|--|--------------------------------|-----------|-------|-------|-------|------------------|-----------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|
| % | | Oil | Water | Product | Pour °F | SUS @ °F | | Mol % | SCFH m/hr | C | H | O | | Mol % | SCFH m/hr | C | H | O | | | | | |
| CO ₂ | 1.66 | Neut. No. 51.4 | 42.1 | | | | | O ₂ | 464.32 | 14.51 | | | 29.02 | CO ₂ | 2.1 | 1.35 | 1.35 | | 2.70 | | | | |
| CH ₄ | 84.46 | Sap No. 58.6 | 42.8 | | | | | CO ₂ | 15.40 | .35 | .35 | .70 | CO | 35.4 | 22.79 | 22.79 | | | 22.79 | | | | |
| C ₂ H ₆ | 10.12 | Hydrox. No. 29.0 | | | | | | CH ₄ | 287.04 | 17.94 | 17.94 | 71.76 | CH ₄ | 5.1 | 3.28 | 3.28 | 13.12 | | | | | | |
| C ₃ H ₈ | 3.54 | Bromine No. 73.2 | | | | | | C ₂ H ₆ | 64.50 | 2.15 | 4.30 | 12.90 | H ₂ | 57.4 | 36.95 | | | 73.90 | | | | | |
| C ₄ H ₁₀ | | % Fe | | | | | | C ₃ H ₈ | 33.00 | .75 | 2.25 | 6.00 | N ₂ | | | | | | | | | | |
| N ₂ | | % Alc | 8.9 | | | | | C ₄ H ₁₀ | 2.32 | .04 | .16 | .40 | H ₂ O | | | | | | 8.46 | 4.23 | | | |
| O ₂ | | | | | | | | N ₂ | | | | | Total | | | | | | | 64.37 | 27.42 | 95.48 | 29.72 |
| | | | | | | | | Total | | | | | | | | | | | | | | | |

| | FRESH FEED | | WET GAS | | | | RECYCLE | COMB. FEED | EFFLUENT | | NET CHANGE ON REACTION | | | | | | | Ultimate Oil | Unsat. % | | | | | |
|--------------------------------|------------|-------|---------|-------|----------|----------------|---------|------------|----------|--------|------------------------|-------|-------|--------|--------|-------|----------|--------------|----------|--------|--|--------|------|-------|
| | % | m/hr | #/hr | % | Measured | At Wt. Balance | | | m/hr | m/hr | % | m/hr | % | Carbon | | | Hydrogen | | | Oxygen | | | | |
| CO | 35.4 | 22.79 | 638.12 | 18.60 | 7.41 | 207.46 | 7.70 | 215.58 | 9.70 | 32.49 | 27.89 | 17.40 | 17.52 | -15.09 | -15.09 | 33.79 | | | -15.09 | | | | | |
| H ₂ | 57.4 | 36.95 | 73.90 | 53.14 | 21.17 | 42.34 | 22.00 | 43.99 | 27.71 | 64.66 | 55.50 | 49.71 | 50.06 | -14.95 | | | | | -29.90 | | | | | |
| CO ₂ | 2.1 | 1.35 | 59.40 | 15.12 | 6.02 | 264.88 | 6.26 | 275.23 | 7.88 | 9.23 | 7.92 | 14.14 | 14.24 | 4.91 | 4.91 | 21.54 | | | 9.82 | | | | | |
| N ₂ | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | | | | | | |
| CH ₄ | 5.1 | 3.28 | 52.48 | 9.72 | 3.87 | 61.92 | 4.02 | 64.34 | 5.07 | 8.35 | 7.17 | 9.09 | 9.15 | .74 | .74 | 3.25 | 2.96 | | | | | | | |
| C ₂ H ₄ | | | | .85 | .34 | 9.52 | .35 | 9.89 | .44 | .44 | .38 | .79 | .80 | .35 | .70 | 3.07 | 1.40 | | | | | | | |
| C ₂ H ₆ | | | | .50 | .20 | 6.00 | .21 | 6.23 | .26 | .26 | .22 | .47 | .47 | .21 | .42 | 1.84 | 1.26 | | | | | | | |
| C ₃ H ₆ | | | | .55 | .22 | 9.24 | .23 | 9.60 | .29 | .29 | .25 | .52 | .52 | .23 | .69 | 3.03 | 1.38 | | | | | 8.64 | 6.25 | 1.38 |
| C ₃ H ₈ | | | | .04 | .02 | .88 | .02 | .91 | .02 | .02 | .02 | .04 | .04 | .02 | .06 | .26 | .16 | | | | | | | |
| C ₄ H ₈ | | | | .57 | .23 | 12.88 | .24 | 13.38 | .30 | .30 | .26 | .54 | .54 | .24 | .96 | 4.21 | 1.92 | | | | | 12.71 | 6.10 | 2.08 |
| C ₄ H ₁₀ | | | | .23 | .09 | 5.22 | .09 | 5.42 | .12 | .12 | .10 | .21 | .21 | .09 | .36 | 1.58 | .90 | | | | | 5.42 | 4.86 | 1.12 |
| C ₅ H ₁₀ | | | | .45 | .18 | 12.60 | .19 | 13.09 | .23 | .23 | .20 | .42 | .42 | .19 | .95 | 4.17 | 1.90 | | | | | 13.09 | 5.40 | 2.42 |
| C ₆ H ₁₂ | | | | .23 | .09 | 7.56 | .09 | 7.86 | .12 | .12 | .10 | .21 | .21 | .09 | .54 | 2.37 | 1.08 | | | | | 7.86 | 5.50 | 1.43 |
| OIL | | | | | | | (66.64) | | | | | .48 | .48 | | 4.76 | 20.89 | 9.52 | | | | | 66.64 | 6.50 | 10.25 |
| WATER | | | | | | | | | | | | 5.27 | 5.31 | | | | 7.42 | | | | | (5.71) | 5.27 | |
| TOTAL | | 64.38 | 823.90 | | 39.84 | 640.52 | 41.40 | 665.52 | 52.15 | 116.51 | 100.01 | 99.29 | 99.97 | 23.53 | 100.00 | | | | | | | 114.36 | | 18.68 |
| H ₂ +CO | | 59.74 | | | 28.58 | | 29.70 | | | | | | | | | | | | | | | | | |
| H ₂ /CO | | 1.62 | | | 2.86 | | 2.86 | | | | | | | | | | | | | | | | | |

| | ULTIMATE YIELDS | | | | WEIGHT BALANCE | | | #/hr | % | #/hr | EFFLUENT RATIOS | CONTRACTION: 36.5 | |
|------------------|-----------------|--------|--------------------------|--------|----------------|----------------------------|--------|---------|-------|-------|--|----------------------------------|---------------------------------|
| | % CO Fed | #/hr | H ₂ /CO #/MCF | g/M3 | Gal/hr | H ₂ /CO Gal/MCF | cc/M3 | | | | | H ₂ /H ₂ O | CO Conversion: 66.2 |
| C1+C2 | 8.16 | 27.98 | 1.24 | 20.97 | | | | Wet Gas | 640.5 | 665.2 | H ₂ /H ₂ O | 9.43 | H ₂ Conversion: 40.5 |
| C3+ | 56.51 | 116.90 | 5.16 | 87.26 | | | | Oil | 33.7 | 33.7 | CO ₂ /CO | .81 | |
| C4+ | 33.22 | 106.39 | 4.70 | 79.48 | | | | Water | 125.0 | 125.0 | (H ₂)/CO ₂ (H ₂)/CO | 7.67 | H ₂ ↑ CO = 50.3 |
| Ult. Oil | | 114.36 | 5.05 | 85.40 | 18.68 | 0.83 | 117.28 | Total | 799.2 | 97.1 | 823.9 | | |
| CO ₂ | 21.54 | 215.75 | 9.53 | 161.15 | | | | | | | | | |
| H ₂ O | | 94.86 | 4.19 | 70.85 | | | | | | | | | |

Yield Calculations assume "oil" is CH₂, and is found by difference on Carbon, and H₂O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M³ = 16.91 × #/MCF. cc/M³ = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 43 D From 7-19-48 Hr. 0800 to 7-20-48 Hr. 0700

| FLOWS | | RUN CONDITIONS | | | DISTILLATIONS | | | CATALYST DATA | | | CATALYST ANALYSIS | | | | | |
|--------------|-------|----------------------------|----------------|---------|---------------|----------|--------------|---------------|--------|-------------------------------|-------------------|-----------|-----------|------------------|-------|-------------------|
| SCFH | % | Generator Press. | 285 | A S T M | | | Hempel Dist. | | | Particle Size | | | | | | |
| Oxygen | 4940 | O ₂ Preheat, °F | 450 | Prod. | 811 | 880-1180 | °F | % | A.P.I. | In Reactor at Start of Period | 695.75 | Screen | | | | |
| Nat. Gas | 7150 | Gas Preheat, °F | 750 | A.P.I. | 39.7 | | to 400 | 69.0 | 46.4 | Fresh Catalyst Charged | 119.0 | Frac. | M | % | M | % |
| Total | 12090 | 40.9 | Reactor Press. | 250 | I.B.P. | | 400-550 | 25.3 | 31.0 | Catalyst Recharged | | On 40 | 420+ | 10.2 | 80+ | |
| Fresh Feed | 18800 | Steam Back Press. | 5% | | | | 550+ | | | Total | 814.75 | 100 | 419-150 | 65.2 | 80-40 | |
| F.F. by C | 19700 | Temperatures, °F | 10% | | | | | | | Catalyst Taken Out | 175.50 | 150 | 149-105 | 5.3 | 40-20 | |
| Avg. F.F. | | Heater Outlet | 20 | | | | | | | In Reactor at End of Period | 641.25 | 200 | 104-74 | 5.1 | 20-10 | |
| Wet Gas | 11400 | Catalyst #1 | 685 | 30 | 256 | | WATER | | | | 250 | 73-62 | 1.8 | 10-0 | | |
| Contraction | | #2 | 710 | 40 | 256 | | Temp. | % | | Reactor d-P, H ₂ O | | 325 | 61-44 | 3.9 | | |
| Recycle | 23160 | #3 | 720 | 50 | 276 | | 200 | | | Pounds in Reactor | | <325 | 43-0 | 8.5 | | |
| Bleed | 4891 | #4 | 690 | 60 | 296 | | 203 | | | Density, lbs./cu. ft. | | | | | | Chem. Anal. |
| | | #5 | | 70 | 316 | | 208 | | | | Bed Height, Feet | | Aerated | 142.0 | % Fe | |
| Total | 28051 | Average | | 80 | 346 | | A.P.I. | 9.9 | | | | | Settled | 144.0 | % C | |
| Total Feed | 46651 | Product Separator | | 90 | 374 | | | | | | | | Compacted | 164.0 | % Oil | |
| Recycle/F.F. | 1.49 | | | 95 | 400 | | | | | Space Vel SCFH/lb. cat. | | Sp. Grav. | 4.0 | Specific Surface | | |
| Inlet Vel. | | | | E.P. | 410 | | | | | Inventory Figures | 73.0 | | | | 4.1 | m ² gm |
| Steam Flow | | | | Rec. | 98.0 | | | | | From d-P Meters | | | | | | |
| | | | | Res. | 1.0 | | | | | | | | | | | |
| | | | | Loss | 1.0 | | | | | | | | | | | |

GENERATOR, ELEMENTAL BALANCE

| NATURAL GAS | | PRODUCT INSPECTION | | | | | | IN | | | | | OUT | | | | | |
|--------------------------------|-------|--------------------|-------|---------|---------|----------|--|--------------------------------|-----------|-------|-------|-------|------------------|-------|-----------|-------|---|-------|
| | % | Oil | Water | Product | Pour °F | SUS @ °F | | Mol % | SCFH m/hr | C | H | O | | Mol % | SCFH m/hr | C | H | O |
| CO ₂ | 1.58 | Neut. No. | 53.5 | 40.1 | | | | O ₂ | 416.96 | 13.03 | | 26.06 | CO ₂ | 2.2 | 1.09 | 1.09 | | 2.18 |
| CH ₄ | 85.52 | Sap. No. | 57.5 | 34.2 | | | | CO | 13.20 | .30 | .30 | .60 | CO | 35.5 | 17.61 | 17.61 | | 17.61 |
| C ₂ H ₆ | 9.41 | Hydrox. No. | 23.4 | | | | | CH ₄ | 258.24 | 16.14 | 16.14 | 64.56 | CH ₄ | 4.4 | 2.18 | 2.18 | | 8.72 |
| C ₃ H ₈ | 3.28 | Bromine No. | 79.3 | | | | | C ₂ H ₆ | 55.40 | 1.78 | 3.56 | 10.68 | H ₂ | 57.5 | 28.52 | | | 57.04 |
| C ₄ H ₁₀ | .15 | % Fe | | | | | | C ₃ H ₈ | 27.28 | .62 | 1.86 | 4.96 | N ₂ | 0.4 | .20 | | | |
| N ₂ | .06 | % Alc | 6.6 | | | | | C ₄ H ₁₀ | 1.74 | .03 | .12 | .30 | H ₂ O | | | | | 13.74 |
| O ₂ | | | | | | | | N ₂ | .28 | .01 | | | Total | | | | | 26.66 |
| | | | | | | | | Total | 31,912.98 | 80.50 | 26.66 | | | 49.60 | 20.88 | 79.50 | | 26.66 |

| FRESH FEED | | | | WET GAS | | | | RECYCLE | COMB. FEED | EFFLUENT | NET CHANGE ON REACTION | | | | | | | | | | | |
|--------------------------------|-------|--------|--------|----------|--------|----------------|---------|---------|------------|----------|------------------------|--------|--------|--------|--------|----------|--------|--------|--------------|-------|--------|------|
| % | m/hr | #/hr | % | Measured | | At Wt. Balance | | m/hr | m/hr | % | m/hr | % | Carbon | | | Hydrogen | | Oxygen | Ultimate Oil | | Unsat. | |
| | | | | m/hr | #/hr | m/hr | #/hr | | | | | | m/hr | a/hr | % | a/hr | % | a/hr | #/hr | #/gal | gal/hr | % |
| CO | 35.5 | 17.61 | 493.08 | 15.62 | 4.58 | 128.24 | 4.18 | 116.97 | 11.31 | 28.92 | 23.70 | 15.49 | 14.66 | -13.43 | -13.43 | 28.74 | | -13.43 | | | | |
| H ₂ | 57.5 | 28.52 | 57.04 | 49.25 | 14.43 | 28.86 | 13.16 | 26.32 | 35.87 | 64.19 | 52.61 | 48.83 | 46.21 | -15.36 | | | -30.72 | | | | | |
| CO ₂ | 2.2 | 1.09 | 47.96 | 17.85 | 5.23 | 230.12 | 4.77 | 209.89 | 12.93 | 14.02 | 11.49 | 17.70 | 16.75 | 3.68 | 3.68 | 20.90 | | 7.36 | | | | |
| N ₂ | 0.4 | .20 | 5.60 | .16 | .05 | 1.40 | .05 | 1.28 | .12 | .32 | .26 | .17 | .16 | -.15 | | | | | | | | |
| CH ₄ | 4.4 | 2.18 | 34.88 | 12.14 | 3.56 | 56.96 | 3.25 | 51.95 | 8.79 | 10.97 | 8.99 | 12.04 | 11.39 | 1.07 | 1.07 | 6.08 | 4.28 | | | | | |
| C ₂ H ₄ | | | | 1.17 | .34 | 9.52 | .31 | 8.68 | .85 | .85 | .70 | 1.16 | 1.10 | .31 | .62 | 3.52 | 1.24 | | | | | |
| C ₂ H ₆ | | | | .65 | .19 | 5.70 | .17 | 5.20 | .47 | .47 | .39 | .64 | .61 | .17 | .34 | 1.93 | 1.02 | | | | | |
| C ₃ H ₆ | | | | 1.01 | .30 | 12.60 | .27 | 11.49 | .73 | .73 | .60 | 1.00 | .95 | .27 | .81 | 4.60 | 1.82 | | | 10.34 | 6.25 | 1.65 |
| C ₃ H ₈ | | | | .17 | .05 | 2.20 | .05 | 2.01 | .12 | .12 | .10 | .17 | .16 | .05 | .15 | .85 | .40 | | | | | |
| C ₄ H ₈ | | | | .86 | .25 | 14.00 | .23 | 12.77 | .62 | .62 | .51 | .85 | .80 | .23 | .92 | 5.22 | 1.84 | | | 12.13 | 6.10 | 1.99 |
| C ₄ H ₁₀ | | | | .41 | .12 | 6.96 | .11 | 6.35 | .30 | .30 | .25 | .41 | .39 | .11 | .44 | 2.50 | 1.10 | | | 6.35 | 4.86 | 1.31 |
| C ₅ H ₁₀ | | | | .51 | .15 | 10.50 | .14 | 9.58 | .37 | .37 | .30 | .51 | .48 | .14 | .70 | 3.97 | 1.40 | | | 9.58 | 5.40 | 1.77 |
| C ₆ H ₁₂ | | | | .20 | .06 | 5.04 | .05 | 4.60 | .14 | .14 | .11 | .19 | .18 | .05 | .30 | 1.90 | .60 | | | 4.60 | 5.50 | .84 |
| OIL | | | | | | | (81.60) | | | | | .44 | .42 | 4.40 | 24.99 | 8.80 | | | 61.60 | 6.50 | 9.48 | |
| WATER | | | | | | | | | | | | 6.07 | 5.74 | | | 8.42 | | | (6.27) | | | |
| TOTAL | 49.60 | 638.56 | | 29.29 | 512.10 | 26.74 | 487.09 | 72.42 | 122.02 | 100.01 | 105.67 | 100.00 | 22.86 | | 100.00 | | | | 104.60 | | 17.04 | |
| H ₂ +CO | 46.13 | | | 19.01 | | 17.34 | | | | | | | | | | | | | | | | |
| H ₂ /CO | 1.62 | | | 3.15 | | 3.15 | | | 2.22 | | 3.15 | | | | | | | | | | | |

| ULTIMATE YIELDS | | | | WEIGHT BALANCE | | EFFLUENT RATIOS | | CONTRACTION: 46.1 | |
|------------------|--------------------|--------|--------------------------------|------------------|--------|-----------------|----------------------------------|----------------------------|--|
| % | C ₀ Fed | #/hr | H ₂ /C ₀ | #/hr | % | #/hr | H ₂ /H ₂ O | C ₀ Conversion: | H ₂ Conversion: |
| | | | #/MCF | g/M ³ | Gal/hr | Gal/MCF | cc/M ³ | 76.3 | 53.9 |
| C1+C2 | 11.53 | 30.95 | 1.77 | 29.93 | | | 8.04 | | |
| C3+ | 43.83 | 108.40 | 6.20 | 104.84 | | | 1.14 | | |
| C4+ | 38.38 | 94.90 | 5.43 | 91.82 | | | 9.19 | | H ₂ - C ₀ = 62.4 |
| Ult. Oil | | 104.60 | 5.98 | 101.12 | 17.04 | 0.97 | 137.06 | | |
| CO ₂ | 20.90 | 161.93 | 9.26 | 156.59 | | | | | |
| H ₂ O | | 109.26 | 6.25 | 105.69 | | | | | |

Yield Calculations assume "oil" is CH₂, and is found by difference on Carbon, and H₂O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M³ = 16.91 × #/MCF. cc/M³ = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEFELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 43 E From 7-20-48 Hr. 0800 to 7-21-48 Hr. 0700

| FLOWS | | RUN CONDITIONS | | | DISTILLATIONS | | | | CATALYST DATA | | | CATALYST ANALYSIS | | | | | | |
|--------------|-------|----------------------------|------|--|---------------|-----------|--|--|---------------|------|-------------------------------|-------------------------------|-----------------------|---------------|-------------|-------------------|-------|---|
| SCFH | % | Generator Press | 285 | | A S T M | | | | Hempel Dist. | | | In Reactor at Start of Period | | Particle Size | | | | |
| Oxygen | 4880 | O ₂ Preheat, °F | 450 | | Prod. Raw Oil | Base-line | | | °F | % | A.P.I. | Fresh Catalyst Charged | | Screen | | | | |
| Nat. Gas | 7100 | Gas Preheat, °F | 810 | | A.P.I. | 41.8 | | | to 400 | 81.3 | 48.1 | Catalyst Recharged | | Frac. | M | % | M | % |
| Total | 11980 | Reactor Press. | 250 | | I.B.P. | 134 | | | 400-550 | 26.0 | 36.0 | Total | | On 40 | 420+ | 7.4 | 80+ | |
| Fresh Feed | 19600 | Steam Back Press. | 5% | | | | | | 550+ | 12.7 | | Catalyst Taken Out | | 100 | 419-150 | 60.0 | 80-40 | |
| F.F. by C | out | Temperatures, °F | 10% | | | 190 | | | | | | In Reactor at End of Period | | 150 | 149-105 | 8.0 | 40-20 | |
| Avg. F.F. | | Heater Outlet | 20 | | | 224 | | | | | | | | 200 | 104-74 | 6.6 | 20-10 | |
| Wet Gas | 13200 | Catalyst #1 | 620 | | | 30 | | | WATER | | | | | 250 | 73-62 | 2.6 | 10-0 | |
| Contraction | | #2 | 655 | | | 40 | | | Temp. | % | Reactor d-P, H ₂ O | | 325 | 61-44 | 5.0 | | | |
| Recycle | 23760 | #3 | 650 | | | 50 | | | 200 | | Pounds in Reactor | | <325 | 43-0 | 10.6 | | | |
| Bleed | 5100 | #4 | 620 | | | 60 | | | 203 | | Density, lbs./cu. ft. | | Density, lbs./cu. ft. | | Chem. Anal. | | | |
| Total | 28860 | #5 | 70 | | | 320 | | | 208 | | Bed Height, Feet | | Aerated | | 147.0 | % Fe | | |
| Total Feed | 48460 | Average | 80 | | | 340 | | | A.P.I. | 9.9 | | | Settled | | 149.0 | % C | | |
| Recycle/F.F. | 1.47 | Product Separator | 90 | | | 370 | | | | | Space Vel. SCFH/lb. cat. | | Compacted | | 175.0 | % Oil | | |
| Inlet Vel. | | | 95 | | | 398 | | | | | Inventory Figures | | Sp. Grav. | | 4.0 | Specific Surface | | |
| Steam Flow | | E.P. | 414 | | | 414 | | | | | From d-P Meters | | | | 22.0 | m ² gm | | |
| | | Rec. | 98.0 | | | 1.0 | | | | | | | | | | | | |
| | | Res. | 1.0 | | | 1.0 | | | | | | | | | | | | |
| | | Loss | 1.0 | | | 1.0 | | | | | | | | | | | | |

| NATURAL GAS | | | | | | | | | | PRODUCT INSPECTION | | | | | | | | | | GENERATOR ELEMENTAL BALANCE | | | | | | | | | |
|--------------------------------|-------|------------------|---------|---------|----------|--------------------------------|-----------|-------|-------|--------------------|------------------|-----------|-------|-------|-------|-------|-------|-------|--|-----------------------------|--|--|--|--|--|--|--|--|--|
| | | | | | IN | | | | | OUT | | | | | | | | | | | | | | | | | | | |
| % | Oil | Water | Product | Pour °F | SUS @ °F | Mol % | SCFH m/hr | C | H | O | Mol % | SCFH m/hr | C | H | O | | | | | | | | | | | | | | |
| CO ₂ | 1.75 | Neut. No. 55.4 | 45.3 | | | O ₂ | 412.16 | 12.98 | | 25.76 | CO ₂ | 2.0 | 1.03 | 1.03 | 2.06 | | | | | | | | | | | | | | |
| CH ₄ | 84.92 | Sop No. 61.5 | 43.0 | | | CO ₂ | 14.52 | .33 | .33 | .66 | CO | 35.9 | 18.57 | 18.57 | 18.57 | | | | | | | | | | | | | | |
| C ₂ H ₆ | 9.03 | Hydrox. No. 23.4 | | | | CH ₄ | 254.56 | 15.91 | 15.91 | 63.64 | CH ₄ | 4.4 | 2.28 | 2.28 | 9.18 | | | | | | | | | | | | | | |
| C ₃ H ₈ | 4.03 | Bromine No. 61.7 | | | | C ₂ H ₆ | 50.70 | 1.69 | 3.38 | 10.14 | H ₂ | 57.0 | 29.48 | | 58.96 | | | | | | | | | | | | | | |
| C ₄ H ₁₀ | .23 | % Fe | | | | C ₃ H ₈ | 33.00 | .75 | 2.25 | 6.00 | N ₂ | 0.7 | .36 | | | | | | | | | | | | | | | | |
| N ₂ | .03 | % Alc | 6.7 | | | C ₄ H ₁₀ | 2.32 | .04 | .16 | .40 | H ₂ O | | | | 11.58 | 5.79 | | | | | | | | | | | | | |
| O ₂ | | | | | | N ₂ | .28 | .01 | | | Total | | | | 51.72 | 21.88 | 79.66 | 26.42 | | | | | | | | | | | |
| | | | | | | Total | | | 51.61 | 22.03 | 80.18 | 26.42 | | | | | | | | | | | | | | | | | |

| FRESH FEED | | | | WET GAS | | | | RECYCLE | | COMB. FEED | | EFFLUENT | | NET CHANGE ON REACTION | | | | | | | | | | | |
|--------------------------------|------|----------|--------|----------------|-------|--------|---------|---------|-------|------------|--------|----------|-------|------------------------|--------|----------|------|--------|------|--------------|--------|--------|------|--|--|
| | | Measured | | At Wt. Balance | | | | | | | | | | Carbon | | Hydrogen | | Oxygen | | Ultimate Oil | | Unsat. | | | |
| % | m/hr | #/hr | % | m/hr | #/hr | m/hr | #/hr | m/hr | % | m/hr | % | m/hr | % | m/hr | a/hr | % | a/hr | % | a/hr | #/hr | #/gal | gal/hr | % | | |
| CO | 35.9 | 18.57 | 519.96 | 21.40 | 7.45 | 208.60 | 7.30 | 204.45 | 16.27 | 34.84 | 27.27 | 23.57 | 20.71 | -11.27 | -11.27 | 39.31 | | | | | | | | | |
| H ₂ | 57.0 | 29.48 | 58.96 | 53.22 | 18.53 | 37.06 | 18.16 | 36.32 | 40.46 | 69.94 | 54.75 | 58.62 | 51.50 | -11.32 | | | | | | | | | | | |
| CO ₂ | 2.0 | 1.03 | 45.32 | 13.13 | 4.57 | 201.08 | 4.48 | 197.08 | 9.98 | 11.01 | 8.62 | 14.40 | 12.65 | 3.45 | 3.45 | 18.58 | | | | | | | | | |
| N ₂ | 0.7 | .36 | 10.08 | .51 | .18 | 5.04 | .18 | 4.94 | .39 | .75 | .59 | .57 | .50 | -.18 | | | | | | | | | | | |
| CH ₄ | 4.4 | 2.28 | 36.48 | 8.49 | 2.96 | 47.36 | 2.90 | 46.42 | 6.45 | 8.73 | 6.83 | 9.35 | 8.21 | .62 | .62 | 3.34 | 2.48 | | | | | | | | |
| C ₂ H ₆ | | | .69 | .24 | 6.72 | .24 | 6.59 | .52 | .52 | .41 | .76 | .67 | .24 | .48 | 2.58 | .96 | | | | | | | | | |
| C ₃ H ₈ | | | .43 | .15 | 4.50 | .15 | 4.41 | .33 | .33 | .26 | .48 | .42 | .15 | .30 | 1.62 | .90 | | | | | | | | | |
| C ₄ H ₁₀ | | | .51 | .18 | 7.56 | .18 | 7.41 | .39 | .39 | .31 | .57 | .50 | .18 | .54 | 2.91 | 1.08 | | | | | 6.67 | 6.25 | 1.07 | | |
| C ₅ H ₁₂ | | | .14 | .05 | 2.20 | .05 | 2.16 | .11 | .11 | .09 | .16 | .14 | .05 | .15 | .81 | .40 | | | | | | | | | |
| C ₆ H ₁₄ | | | .59 | .21 | 11.76 | .21 | 11.53 | .45 | .45 | .35 | .66 | .58 | .21 | .84 | 4.52 | 1.68 | | | | | 10.95 | 6.10 | 1.80 | | |
| C ₇ H ₁₆ | | | .26 | .09 | 5.22 | .09 | 5.12 | .20 | .20 | .16 | .29 | .25 | .09 | .38 | 1.94 | .90 | | | | | 5.12 | 4.86 | 1.05 | | |
| C ₈ H ₁₈ | | | .44 | .15 | 10.50 | .15 | 10.29 | .33 | .33 | .26 | .48 | .42 | .15 | .75 | 4.04 | 1.50 | | | | | 10.29 | 5.40 | 1.91 | | |
| C ₉ H ₂₀ | | | .19 | .07 | 5.88 | .07 | 5.76 | .14 | .14 | .11 | .21 | .18 | .07 | .42 | 2.26 | .84 | | | | | 5.76 | 5.50 | 1.05 | | |
| OIL | | | | | | | (47.04) | | | | .54 | .30 | | 3.33 | 18.09 | 6.72 | | | | | 47.04 | 6.50 | 7.24 | | |
| WATER | | | | | | | | | | | 3.37 | 2.96 | | | | 5.18 | | | | | (2.59) | 3.37 | | | |
| TOTAL | | 51.72 | 670.80 | | 34.82 | 553.48 | 34.16 | 542.48 | 76.03 | 127.74 | 100.01 | 113.83 | 99.99 | 17.56 | 100.00 | | | | | | 85.83 | 14.12 | | | |
| H ₂ +CO | | 48.05 | | | 25.98 | | 25.46 | | | | | | | | | | | | | | | | | | |
| H ₂ /CO | | 1.59 | | | 2.49 | | 2.49 | | | | 2.01 | 2.49 | | | | | | | | | | | | | |

| ULTIMATE YIELDS | | | | | | WEIGHT BALANCE | | | EFFLUENT RATIOS | | CONTRACTION: 34.0 | |
|------------------|-------|---------------------|------------------|---------------------|---------|-------------------|---------|-------|-----------------|--|----------------------------|--|
| | | H ₂ / CO | | H ₂ / CO | | | | | | | | |
| % CO Fed | #/hr | #/MCF | g/M ³ | Gal/hr | Gal/MCF | cc/M ³ | Wet Gas | #/hr | % | H ₂ /H ₂ O | CO Conversion: | |
| C1+C2 | 7.54 | 20.94 | 1.15 | 19.45 | | | Oil | 29.3 | 29.3 | CO ₂ /CO | .61 | |
| C3+ | 34.57 | 89.31 | 4.90 | 82.86 | | | Water | 99.3 | 99.3 | (H ₂)(CO ₂)/(H ₂ O)(CO) | 10.63 | |
| C4+ | 30.85 | 79.74 | 4.38 | 74.07 | | | Total | 682.1 | 101.8 | 670.8 | H ₂ + CO = 47.0 | |
| Ult. Oil | | 85.83 | 4.71 | 79.65 | 14.12 | 0.78 | | | | | | |
| CO ₂ | | 18.58 | 151.76 | 8.53 | 140.86 | | | | | | | |
| H ₂ O | | 60.66 | 3.33 | 56.31 | | | | | | | | |

Yield Calculations assume "oil" is CH₂, and is found by difference on Carbon, and H₂O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M³ = 16.91 × #/MCF. cc/M³ = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 43 P From 7-21-48 Hr. 0800 to 7-22-48 Hr. 0700

| FLOWS | | RUN CONDITIONS | | | | DISTILLATIONS | | | | CATALYST DATA | | | | CATALYST ANALYSIS | | | |
|--------------|-------|----------------------------|----------------|---------------|----------|---------------|---------|-------------------------------|-----------------------------|---------------|----------------------|---------------|------|-------------------|-----|-------------|--|
| SCFH | % | Generator Press. | 285 | A S T M | | Hempel Dist. | | In Reactor at Start of Period | | 678.25 | | Particle Size | | | | | |
| Oxygen | 3120 | O ₂ Preheat, °F | 450 | Prod. Raw Oil | Gasoline | °F | % | A.P.I. | Fresh Catalyst Charged | 165.00 | Screen Sedimentation | | | | | | |
| Nat Gas | 4050 | Gas Preheat, °F | 780 | A.P.I. | 46.4 | to 400 | 68.6 | 53.2 | Catalyst Recharged | | Frac. | M | % | M | % | | |
| Total | 7170 | 43.5 | Reactor Press. | 250 | I.B.P. | 116 | 400-550 | 22.0 | 36.7 | Total | 843.25 | On 40 | 420+ | 17.9 | 80+ | | |
| Fresh Feed | 12700 | Steam Back Press. | 5% | | | | 550+ | 9.4 | Catalyst Taken Out | 59.25 | 100 | 419-150 | 46.6 | 80-40 | | | |
| F.F. by C | out | Temperatures, °F | 10% | | 156 | | | | In Reactor at End of Period | 784.00 | 150 | 149-105 | 8.8 | 40-20 | | | |
| Avg F.F. | | Heater Outlet | 20 | | 186 | | | | | | 200 | 104-74 | 7.3 | 20-10 | | | |
| Wet Gas | 7340 | Catalyst #1 | 620 | 30 | 212 | WATER | | | | | 250 | 73-62 | 2.7 | 10-0 | | | |
| Contraction | | #2 | 645 | 40 | 254 | Temp | % | Reactor d-P, H ₂ O | | | 325 | 61-44 | 4.6 | | | | |
| Recycle | 15040 | #3 | 650 | 50 | 254 | 200 | | Pounds in Reactor | | | <325 | 43-0 | 12.1 | | | | |
| Bleed | 7784 | #4 | 615 | 60 | 276 | 203 | | Density, lbs./cu. ft. | | | | | | | | Chem. Anal. | |
| | | #5 | | 70 | 300 | 208 | | Bed Height, Feet | | | | | | | | | |
| Total | 22820 | Average | 80 | 326 | A.P.I. | 10.4 | | | | | | | | | | | |
| Total Feed | 35520 | Product Separator | 90 | 390 | | | | | | | | | | | | | |
| Recycle/F.F. | 1.80 | | 95 | 414 | | | | Space Vel. SCFH/lb cat. | | | | | | | | | |
| Inlet Vel. | | | E.P. | 98.0 | | | | Inventory Figures | 45.5 | | | | | | | | |
| Steam Flow | | | Rec. | 1.0 | | | | From d-P Meters | | | | | | | | | |
| | | | Res. | 1.0 | | | | | | | | | | | | | |
| | | | Loss. | | | | | | | | | | | | | | |

| NATURAL GAS | | PRODUCT INSPECTION | | | | | | | | | | IN | | | | | OUT | | | | | | | |
|--------------------------------|-------|--------------------|-------|---------|---------|----------|--|--|--|--|--|--------------------------------|-----------|-------|-------|-------|------------------|-----------------|-----------|-------|-------|---|-------|-------|
| % | | Oil | Water | Product | Pour °F | SUS @ °F | | | | | | Mol % | SCFH m/hr | C | H | O | | Mol % | SCFH m/hr | C | H | O | | |
| CO ₂ | 1.71 | Neut. No. 51.6 | 44.0 | | | | | | | | | O ₂ | 263.36 | 8.23 | | | 16.46 | CO ₂ | 2.2 | .74 | .74 | | 1.48 | |
| CH ₄ | 83.37 | Sap No. 55.5 | 38.9 | | | | | | | | | CO ₂ | 7.92 | .18 | .18 | .36 | CO | 36.3 | 12.16 | 12.16 | | | 12.16 | |
| C ₂ H ₆ | 10.40 | Hydrox. No. 53.5 | | | | | | | | | | CH ₄ | 142.56 | 8.91 | 8.91 | 35.64 | CH ₄ | 4.2 | 1.41 | 1.41 | | | 5.64 | |
| C ₃ H ₈ | 4.29 | Bromine No. 67.5 | | | | | | | | | | C ₂ H ₆ | 33.30 | 1.11 | 2.22 | 6.66 | H ₂ | 56.9 | 19.07 | | | | 38.14 | |
| C ₄ H ₁₀ | .24 | % Fe | | | | | | | | | | C ₃ H ₈ | 20.24 | .46 | 1.38 | 3.68 | N ₂ | 0.4 | .13 | | | | | |
| N ₂ | | % Alc | 8.9 | | | | | | | | | C ₄ H ₁₀ | 1.74 | .05 | .12 | .30 | H ₂ O | | | | | | 6.36 | |
| O ₂ | | | | | | | | | | | | N ₂ | | | | | Total | | | | | | 3.18 | |
| | | | | | | | | | | | | Total | 18.92 | 12.81 | 46.28 | 16.82 | | | 33.51 | 14.31 | 50.14 | | | 16.82 |

| FRESH FEED | | | | WET GAS | | | | RECYCLE | | COMB. FEED | | EFFLUENT | | NET CHANGE ON REACTION | | | | | | | | | |
|--------------------------------|------|-------|--------|----------|-------|----------------|-------|---------|-------|------------|-------|----------|--------|------------------------|--------|----------|------|--------|--------------|-------|--------|------|--|
| % | m/hr | #/hr | | Measured | | At Wt. Balance | | m/hr | m/hr | % | m/hr | % | Carbon | | | Hydrogen | | Oxygen | Ultimate Oil | | Unsat. | | |
| CO | 36.3 | 12.16 | 340.48 | 13.18 | 2.55 | 71.40 | 2.06 | 57.65 | 7.95 | 20.11 | 21.43 | 10.01 | 12.26 | -10.10 | -10.10 | 16.94 | | | | | | | |
| H ₂ | 56.9 | 19.07 | 38.14 | 43.52 | 8.43 | 16.86 | 6.81 | 13.61 | 26.25 | 45.32 | 48.30 | 33.07 | 40.51 | -12.26 | | -24.52 | | | | | | | |
| CO ₂ | 2.2 | .74 | 32.56 | 19.89 | 3.85 | 169.40 | 3.11 | 136.79 | 12.00 | 12.74 | 15.58 | 15.11 | 18.51 | 2.37 | 2.37 | 19.51 | | | 4.74 | | | | |
| N ₂ | 0.4 | .13 | 3.64 | .16 | .03 | .84 | .02 | .68 | .10 | .23 | .25 | .12 | .15 | .11 | | | | | | | | | |
| CH ₄ | 4.2 | 1.41 | 22.56 | 15.33 | 2.97 | 47.52 | 2.40 | 38.37 | 9.25 | 10.66 | 11.36 | 11.65 | 14.27 | .99 | .99 | 8.15 | 3.96 | | | | | | |
| C ₂ H ₆ | | | | 1.89 | .37 | 10.36 | .30 | 8.37 | 1.14 | 1.14 | 1.21 | 1.44 | 1.76 | .30 | .60 | 4.94 | 1.20 | | | | | | |
| C ₃ H ₈ | | | | 1.03 | .20 | 6.70 | .18 | 4.84 | .62 | .62 | .66 | .79 | .97 | .16 | .32 | 2.63 | .96 | | | | | | |
| C ₄ H ₁₀ | | | | 1.81 | .35 | 14.70 | .28 | 11.87 | 1.09 | 1.09 | 1.16 | 1.37 | 1.68 | .28 | .84 | 6.92 | 1.68 | | | 10.68 | 6.25 | 1.71 | |
| C ₅ H ₁₂ | | | | .22 | .04 | 1.76 | .03 | 1.42 | .13 | .13 | .14 | .16 | .20 | .03 | .09 | .74 | .24 | | | | | | |
| C ₆ H ₁₄ | | | | 1.38 | .27 | 15.12 | .22 | 12.21 | .83 | .83 | .88 | 1.05 | 1.29 | .22 | .88 | 7.25 | 1.76 | | | 11.60 | 6.10 | 1.90 | |
| C ₇ H ₁₆ | | | | .39 | .07 | 4.06 | .06 | 3.28 | .24 | .24 | .26 | .30 | .37 | .06 | .24 | 1.88 | .60 | | | 3.28 | 4.86 | .67 | |
| C ₈ H ₁₈ | | | | .87 | .17 | 11.90 | .14 | 9.61 | .52 | .52 | .55 | .66 | .81 | .14 | .70 | 5.76 | 1.40 | | | 9.61 | 5.40 | 1.78 | |
| C ₉ H ₂₀ | | | | .35 | .06 | 5.04 | .05 | 4.07 | .20 | .20 | .21 | .25 | .31 | .05 | .30 | 2.47 | .60 | | | 4.07 | 5.50 | .74 | |
| OIL | | | | | | | | (38.78) | | | .28 | .34 | | 2.77 | 22.81 | 5.54 | | | 38.78 | 6.50 | 5.97 | | |
| WATER | | | | | | | | | | | 5.36 | 6.57 | | | | 6.58 | | | (3.29) | 5.36 | | | |
| TOTAL | | 33.51 | 437.38 | | 19.37 | 374.96 | 15.64 | 302.77 | 60.32 | 93.83 | 99.99 | 81.82 | 100.0 | 17.87 | | 100.01 | | | 78.02 | | 12.77 | | |
| H ₂ +CO | | 31.23 | | | 10.98 | | 8.87 | | | | | | | | | | | | | | | | |
| H ₂ /CO | | 1.57 | | | 3.31 | | 3.31 | | | | 2.25 | | 3.50 | | | | | | | | | | |

| ULTIMATE YIELDS | | | | | | WEIGHT BALANCE | | | EFFLUENT RATIOS | | CONTRACTION: 53.5 | |
|------------------|-------|--------------------------|--------|--------|----------------------------|----------------|---------|-------|-----------------|-------|---|----------------|
| % CO Fed | #/hr | H ₂ /CO #/MCF | g/M3 | Gal/hr | H ₂ /CO Gal/MCF | cc/M3 | Wet Gas | #/hr | % | #/hr | H ₂ /H ₂ O | CO Conversion: |
| C1+C2 | 15.72 | 29.02 | 2.45 | 41.43 | | | Wet Gas | 374.9 | | 302.9 | 6.17 | 83.1 |
| C3+ | 47.83 | 81.24 | 6.86 | 116.00 | | | Oil | 34.6 | | 34.6 | C ₂ /C ₁ | 64.3 |
| C4+ | 40.17 | 67.95 | 5.74 | 97.06 | | | Water | 100.0 | | 100.0 | H ₂ Conversion: | 71.6 |
| Ult. Oil | 78.02 | 6.59 | 111.44 | 12.77 | 1.08 | 152.60 | Total | 509.5 | 116.5 | 437.4 | (H ₂)(CO ₂)(H ₂ O)(CO) | 9.31 |
| CO ₂ | 19.51 | 104.23 | 8.80 | 148.81 | | | | | | | | |
| H ₂ O | | 96.48 | 8.15 | 137.82 | | | | | | | | |

Yield Calculations assume "oil" is CH₂, and is found by difference on Carbon, and H₂O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C and 14.7 psig. g/M3 = 16.91 × #/MCF. cc/M3 = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 43 g From 7-22-48 Hr. 0800 to 7-23-48 Hr. 0700

| FLOWS | | RUN CONDITIONS | | DISTILLATIONS | | | | CATALYST DATA | | CATALYST ANALYSIS | | | | | | | |
|--------------|-------|----------------------------|----------------|---------------|--------|--------------|------|-------------------------------|------|-------------------|-------------------------------|-------|--------|---------|---------------|-------|-------------|
| SCFH | % | Generator Press. | 280 | A S T M | | Hempel Dist. | | In Reactor at Start of Period | | Particle Size | | | | | | | |
| Oxygen | 3080 | O ₂ Preheat, °F | 480 | Prod. | 8.17 | 0.11 | 1.15 | °F | % | A.P.I. | Fresh Catalyst Charged | 784.0 | Screen | | Sedimentation | | |
| Nat. Gas | 3660 | Gas Preheat, °F | 810 | A.P.I. | 45.3 | | | to 400 | 64.3 | 54.3 | Catalyst Recharged | | Frac. | M | % | M | % |
| Total | 6740 | 45.7 | Reactor Press. | 250 | I.B.P. | 118 | | 400-550 | 14.0 | 36.8 | Total | 851.0 | On 40 | 420+ | 51.6 | 80+ | |
| Fresh Feed | 10700 | Steam Back Press. | 5% | | | | | 550+ | | | Catalyst Taken Out | 65.5 | 100 | 419-150 | 59.8 | 80-40 | |
| F. F. by C | out | Temperatures, °F | 10% | | | | | | | | In Reactor at End of Period | 785.5 | 150 | 149-105 | 6.4 | 40-20 | |
| Avg. F. F. | | Heater Outlet | 20 | | | | | | | | | | 200 | 104-74 | 5.4 | 20-10 | |
| Wet Gas | 5350 | Catalyst #1 | 620 | 30 | | 208 | | WATER | | | | | 250 | 73-62 | 2.1 | 10-0 | |
| Contraction | | #2 | 640 | 40 | | 228 | | Temp. | % | | Reactor d-P, H ₂ O | | 325 | 61-44 | 5.0 | | |
| Recycle | 13500 | #3 | 645 | 50 | | 248 | | 200 | | | Pounds in Reactor | | <325 | 43-0 | 9.7 | | |
| Bleed | 7445 | #4 | 620 | 60 | | 268 | | 203 | | | Density, lbs./cu. ft. | | | | | | Chem. Anal. |
| | | #5 | 620 | 70 | | 292 | | 208 | | | Bed Height, Feet | | | | | | |
| Total | 20945 | Average | 80 | | | 216 | | A.P.I., 10.1 | | | | | | | | | |
| Total Feed | 31645 | Product Separator | 90 | | | 360 | | | | | | | | | | | |
| Recycle/F.F. | 1.96 | | 95 | | | 390 | | | | | Space Vel. SCFH/lb. cat. | | | | | | |
| Inlet Vel. | | | E.P. | | | 410 | | | | | Inventory Figures | 40.3 | | | | | |
| Steam Flow | | | Rec. | | | 98.0 | | | | | From d-P Meters | | | | | | |
| | | | Res. | | | 1.0 | | | | | | | | | | | |
| | | | Loss | | | 1.0 | | | | | | | | | | | |

| NATURAL GAS | | PRODUCT INSPECTION | | | | | | GENERATOR ELEMENTAL BALANCE | | | | | | | | | |
|--------------------------------|-------|--------------------|-------|---------|---------|----------|--------------------------------|-----------------------------|------|------|-------|------------------|-----------|-------|-------|-------|------|
| % | | Oil | Water | Product | Pour °F | SUS @ °F | IN | | | OUT | | | | | | | |
| | | | | | | | Mol % | SCFH m/hr | C | H | O | Mol % | SCFH m/hr | C | H | O | |
| CO ₂ | 1.51 | Neut. No. | 36.7 | 42.8 | | | O ₂ | 260.16 | 9.13 | | 16.26 | CO ₂ | 1.9 | .54 | .54 | 1.08 | |
| CH ₄ | 83.56 | Sap. No. | 39.0 | 40.1 | | | CO ₂ | 6.60 | .15 | .15 | .30 | CO | 34.6 | 9.77 | 9.77 | 9.77 | |
| C ₂ H ₆ | 10.21 | Hydrox. No. | 18.7 | | | | CH ₄ | 129.12 | 8.07 | 8.07 | 32.28 | CH ₄ | 4.6 | 1.30 | 1.30 | 5.20 | |
| C ₃ H ₈ | 4.55 | Bromine No. | 60.0 | | | | C ₂ H ₆ | 28.70 | .99 | 1.98 | 5.94 | H ₂ | 58.8 | 16.60 | | 33.20 | |
| C ₄ H ₁₀ | .19 | % Fe | | | | | C ₃ H ₈ | 19.36 | .44 | 1.32 | 3.52 | N ₂ | 0.1 | .03 | | | |
| N ₂ | | % Alc | 9.4 | | | | C ₄ H ₁₀ | 1.16 | .02 | .08 | .20 | H ₂ O | | | | 11.42 | 5.71 |
| O ₂ | | | | | | | N ₂ | | | | | Total | | | | | |
| | | | | | | | Total | | | | | | 28.24 | 11.61 | 49.82 | 16.56 | |

| FRESH FEED | | WET GAS | | | | RECYCLE | | COMB. FEED | | EFFLUENT | | NET CHANGE ON REACTION | | | | | | | | |
|--------------------------------|-------|---------|--------|----------|----------------|---------|---------|------------|-------|----------|--------|------------------------|----------|--------|--------|--------------|--------|--------|---|--------|
| % | m/hr | #/hr | % | Measured | At Wt. Balance | m/hr | m/hr | % | m/hr | % | Carbon | | Hydrogen | | Oxygen | Ultimate Oil | Unsat. | | | |
| | | | | m/hr | #/hr | m/hr | | | | | m/hr | a/hr | % | a/hr | % | a/hr | #/gal | gal/hr | % | |
| CO | 34.6 | 9.77 | 273.56 | 12.99 | 1.83 | 51.24 | 1.51 | 42.18 | 7.19 | 16.96 | 20.29 | 8.70 | 12.10 | - 8.26 | - 8.26 | 15.46 | | | | |
| H ₂ | 58.8 | 16.60 | 33.20 | 42.69 | 6.03 | 12.06 | 4.96 | 9.93 | 23.62 | 40.22 | 48.12 | 28.58 | 39.75 | -11.64 | | -23.28 | | | | |
| CO ₂ | 1.9 | .54 | 23.76 | 20.13 | 2.84 | 124.96 | 2.34 | 102.85 | 11.14 | 11.68 | 13.97 | 13.48 | 18.75 | 1.80 | 1.80 | 18.42 | | | | 3.60 |
| N ₂ | 0.1 | .03 | .84 | .05 | .01 | .28 | .01 | .23 | .03 | .06 | .07 | .04 | .06 | - .02 | | | | | | |
| CH ₄ | 4.6 | 1.30 | 20.80 | 15.72 | 2.22 | 35.52 | 1.83 | 29.24 | 8.70 | 10.00 | 11.96 | 10.53 | 14.65 | .53 | .53 | 5.42 | | | | 2.12 |
| C ₂ H ₆ | | | | 1.93 | .27 | 7.56 | .22 | 6.22 | 1.07 | 1.07 | 1.28 | 1.29 | 1.79 | .22 | .44 | 4.50 | | | | .88 |
| C ₃ H ₈ | | | | 1.13 | .16 | 4.80 | .13 | 3.95 | .63 | .63 | .75 | .76 | 1.06 | .13 | .26 | 2.66 | | | | .78 |
| C ₄ H ₁₀ | | | | 1.94 | .27 | 7.34 | .22 | 9.33 | 1.07 | 1.07 | 1.28 | 1.28 | 1.79 | .22 | .66 | 6.76 | | | | 1.32 |
| C ₅ H ₁₂ | | | | .24 | .03 | 1.32 | .02 | 1.09 | .13 | .13 | .16 | .15 | .21 | .02 | .06 | .61 | | | | .16 |
| C ₆ H ₁₄ | | | | 1.44 | .20 | 11.20 | .16 | 9.22 | .80 | .80 | .96 | .96 | 1.34 | .16 | .64 | 6.55 | | | | 1.28 |
| C ₇ H ₁₆ | | | | .53 | .07 | 4.06 | .06 | 3.34 | .29 | .29 | .35 | .35 | .49 | .06 | .24 | 2.46 | | | | .60 |
| C ₈ H ₁₈ | | | | .89 | .13 | 9.10 | .11 | 7.49 | .49 | .49 | .59 | .60 | .83 | .11 | .55 | 5.63 | | | | 1.10 |
| C ₉ H ₂₀ | | | | .52 | .05 | 4.20 | .04 | 3.46 | .18 | .18 | .22 | .22 | .31 | .04 | .24 | 2.46 | | | | .48 |
| OIL | | | | | | | (39.76) | | | | | .28 | .39 | | 2.84 | 29.07 | | | | 5.68 |
| WATER | | | | | | | | | | | | 4.66 | 6.48 | | | 8.88 | | | | (4.44) |
| TOTAL | 28.23 | 352.16 | | 14.12 | 277.64 | 11.61 | 228.53 | 55.33 | 83.58 | 100.0 | 71.89 | 100.0 | 16.63 | | 100.0 | | | | | 71.21 |
| H ₂ +CO | 26.37 | | | 17.88 | | 6.47 | | | | | | | | | | | | | | 11.61 |
| H ₂ /CO | 1.70 | | | 3.30 | | 3.28 | | | | | | | | | | | | | | |

| ULTIMATE YIELDS | | | | | | WEIGHT BALANCE | | | EFFLUENT RATIOS | | CONTRACTION: | |
|------------------|-------|--------------------------|------|--------|----------------------------|----------------|---------|-------|-----------------|----------------------------------|----------------|----------------------------|
| % CO Fed | #/hr | H ₂ /CO #/MCF | g/M3 | Gal/hr | H ₂ /CO Gal/MCF | cc/M3 | #/hr | % | #/hr | H ₂ /H ₂ O | CO Conversion: | H ₂ Conversion: |
| C1+C2 | 12.58 | 18.61 | 1.86 | 31.45 | | | Wet Gas | 277.6 | 228.6 | 6.13 | 84.5 | 70.1 |
| C3+ | 53.54 | 73.69 | 7.38 | 124.80 | | | Oil | 24.3 | 24.3 | 1.55 | | |
| C4+ | 46.17 | 63.27 | 6.33 | 107.04 | | | Water | 99.3 | 99.3 | 9.80 | | |
| Un. Oil | | 71.21 | 7.13 | 120.57 | 11.61 | 1.16 | Total | 411.2 | 116.8 | 352.2 | | |
| CO ₂ | 18.42 | 79.09 | 7.92 | 133.93 | | | | | | | | |
| H ₂ O | | 85.88 | 8.40 | 142.04 | | | | | | | | |

Yield Calculations assume "oil" is CH₂, and is found by difference on Carbon, and H₂O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M3 = 16.91 × #/MCF. cc/M3 = 141.3 × gal/MCF.