SECTION 7

PRODUCTS: MARKETABILITY AND CHARACTERISTICS

The products produced in the POGO conceptual plant are finished premium quality products similar to their counterparts derived from crude oil sources. Judgements regarding product marketability are presented in subsection 7.1, and detailed forecasts of the product characteristics to support the marketability judgements are given in subsection 7.2.

7.1 PRODUCT MARKETABILITY

The products described in this section are similar to petroleum products presently marketed in the U.S. In all cases, the products are considered interchangeable with similar products now being marketed. The following products will be discussed:

- SNG
- Propane
- Butane
- Gasoline
- Fuel Oil
- Crystalline Coke
- Byproducts
  - Sulfur
  - Anhydrous Ammonia

7.1.1 SNG (SUBSTITUTE NATURAL GAS)

This product would be sold as pipeline gas for both industrial and residential use. Higher heating value, lifting index, flashback index, and yellow-tip index all fall within the limits of currently used pipeline gases.

7.1.2 PROPANE AND BUTANE LPG

These products would be marketed in the LPG field. Other alternatives include marketing as ethylene feed stock.

7.1.3 GASOLINE

The gasoline produced is satisfactory for gasoline pool usage. It meets "no lead" standards, can be sold for upgrading regular gasolines, and with a minimal addition of additives, as "high test" gasoline.

7.1.4 FUEL OIL

This is a diesel weight oil. Since the ash content will probably exceed 0.01%, it would be marketed as boiler fuel and possibly as No. 4 economy RR diesel fuel. Because of its very low sulfur content and high heating value, it would be expected to command a premium price as blending stock for No. 6 residual fuel oil.

7.1.5 CRYSTALLINE COKE

This product is "needle coke," electrode-grade crystalline carbon, expected to equal or better petroleum-derived coke having superb crystalline structures. Currently, this product is in short supply.

7.1.6 BYPRODUCTS

The elemental sulfur and anhydrous ammonia produced are commercial specification products. As such, they are readily marketable.

7.1.7 SUMMARY

The results of our current analysis indicate that the POGO products can be marketed.

7.2 PRODUCT CHARACTERISTICS FORECAST

The characteristics forecast for each product follow:

7.2.1 SNG (SUBSTITUTE NATURAL GAS)

Composition, Dry

Component	Vol. %
Methane	66.50
Ethylene	2.08
Ethane	15.58
Propylene	0.10
Propane	0.73
Nitrogen	4.52
Hydrogen	7.29
Carbon Monoxide	Trace
Carbon Dioxide	3.20
	100.00

Higher Heating Value,	Btu/scf	1,031
	Btu/lb	20,462
Lifting Index		0.99
Flashback Index		1.14
Yellow-Tip Index		0.95

Hydrocarbon Dew Point, °F -36 @ 1000 psig

Water Dew Point, °F 10 @ 1000 psig

7.2.2 PROPANE AND BUTANE LPG

Composition, Mol. %

Component	Propane	Butane
Ethylene	0.06	-
Ethane	3.72	Trace
Propylene	6.71	0.07
Propane	87.97	15.00
Butylene	0.26	6.73
Butane	1.28	76.98
Pentane and Higher	-	1.22
Sulfur	NIL	NIL
Sp. gr. @ 60°F, Liquid	0.505	0.577
Vapor Pressure @ 100°F, psig	196	58
Butane and Heavier, wt. %	<2.5	-
Pentane and Heavier, wt. %	-	<2.0
Moisture Content	Pass	Pass
Corrosion, Copper Strip	No. 1	No. 1
Higher Heating Value, Btu/lb	21,628	21,306

7.2.3 POOL GASOLINE

Distillation

Vol.%	Temp. °F
10	125
50	287
90	379

RVP, psi 10.

RON 93.4

Olefin, Mol. % 3.5

Higher Heating Value, Btu/lb 20,268

7.2.4 FUEL OIL

Distillation

Vol. %	Temp. °F
IBP	394
50	500
90	590
EP	655

Flash Point PMCC, °F	170
Sulfur, wt. %	0.04
Nitrogen, wt. %	0.39
Ash, wt. %	<0.10
Higher Heating Value, Btu/lb	19,420
Viscosity, cs @ 122°F (SSU)	2. (33)
Gravity, °API	19.5

7.2.5 CRYSTALLINE COKE

Moisture, %	0.10
Sulfur, %	0.08
Ash, %	0.05
Real Density, gm/cc	1.96
Specific Resistivity, OHMS-inch	0.035
Higher Heating Value, Btu/lb	14,433

7.2.6 BYPRODUCTS

Sulfur

Sulfur, wt. %	99.8 min
Ash, wt. %	0.05 max
Color	Bright Yellow (Combined Products)
Higher Heating Value, Btu/lb	3,990.

Ammonia

Ammonia Content	99.99 wt. %
Color	Colorless
Water	100 ppm, max
Oils	2 ppm
Carbon Dioxide	3 ppm
Hydrogen Sulfide	Nondetectable
Chlorine	2 ppm
Iron Carbonyl	3 ppm
Noncondensables	0.1 cc/g
Higher Heating Value, Btu/lb	9,670.