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Analyses of Natural Gases, 1987

By B. J. Moore and Stella Sigler

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ANALYSES OF NATURAL GASES, 1987

By B. J. Moore[1] and Stella Sigler[2]

ABSTRACT

This publication contains analyses and related source data for 191 natural gas samples from 22 states and 1 foreign country. Of the total samples, 182 were collected during calendar year 1987. The remainder were collected earlier, but releases granting permission to publish were not received before 1987. All samples were obtained and analyzed as part of Bureau of Mines investigations of the occurrences of helium in natural gases of countries with free market economies. This survey has been conducted since 1917. The analyses published herein were made by mass spectrometer and chromatograph.

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INTRODUCTION

This Bureau of Mines publication contains analyses and related source data for 191 natural gas samples from 22 states and 1 foreign country. Of these samples, 182 were collected during calendar year 1987; 9 samples were collected earlier, but releases granting permission to publish were not received before 1987. All samples were obtained and analyzed as part of Bureau of Mines investigations of the occurrences of helium in natural gases of countries with free market economies. This survey has been conducted since 1917. The analyses published herein were made by the mass spectrometer and chromatograph.

The results of these investigations are published annually to make the information available to the petroleum industry and the general public. Thirty-two publications have presented the results of 14,738 gas analyses made prior to 1987. The first three bulletins (1-3)[3] contain analyses and related source data on 5,218 gas samples collected from 1917 through 1960; these bulletins have been supplemented annually by information circulars (4-17, 19-24, 26-30, 32) containing 9,520 analyses of samples collected since 1960.

In 1976, a compilation of the analyses made prior to 1975 was prepared by the Bureau of Mines and published by the National Technical Information Service of the U.S. Department of Commerce (18). This compilation contains 10,562 analyses of gas samples from gas and oil wells and natural gas pipelines in 37 States and 23 foreign countries. In 1982, a compilation of analyses made prior to 1981 was published (25). The 1982 publication contains 12,554 analyses of gas samples from gas and oil wells and natural gas pipelines in 39 States and 24 foreign countries and includes the analyses from 1976 publication. The latest of these compilations was published in 1987 and contains 14,242 analyses made prior to 1986, including the analyses from the 1976 and 1982 publications. The samples were taken from wells or pipelines in 40 States and 24 foreign countries (31).

In addition to being in the publications, all analyses and related information published through 1987 are available on a magnetic tape file. The tape is available for $200 from the National Technical Information Service, Springfield, VA 22161, telephone (703) 487-4650; orders should refer to Bureau of Mines tape PB 88-172325.

The helium survey program is conducted by soliciting natural gas samples throughout the United States and other countries with free market economies. Without the assistance of the petroleum industry, State and Federal agencies, and many individuals engaged in oil and gas exploration and production, the helium survey in its present scope would not be possible.

GEOLOGIC PROVINCES OF THE UNITED STATES

The tables include geologic province codes so each sample source can be located within a specific geologic province as defined by the Committee on Statistics of Drilling of the American Association of Petroleum Geologists.[4] These provinces, which are given in the following list and shown in figure 1, are delineated by political boundaries for convenience and for accommodation of data processing equipment. Not all of the provinces shown are gas-producing areas, so many of the codes are not used in this publication. Since State or Federal ownership is not always known in offshore areas, only one code is used for each State. Owing to the lack of information on the location of wells in Alaska, only one code, 972, is used for all wells.

The following list and figure 1 are taken from the article cited in footnote 4.

[3]Underlined numbers in parentheses refer to items in the list of previous publications at the end of this report.

[4]Meyer, R. F. Geologic Provinces Code Map for Computer Use. AAPG Bull., v. 54, No. 7, July 1970, pp. 1301-1305.

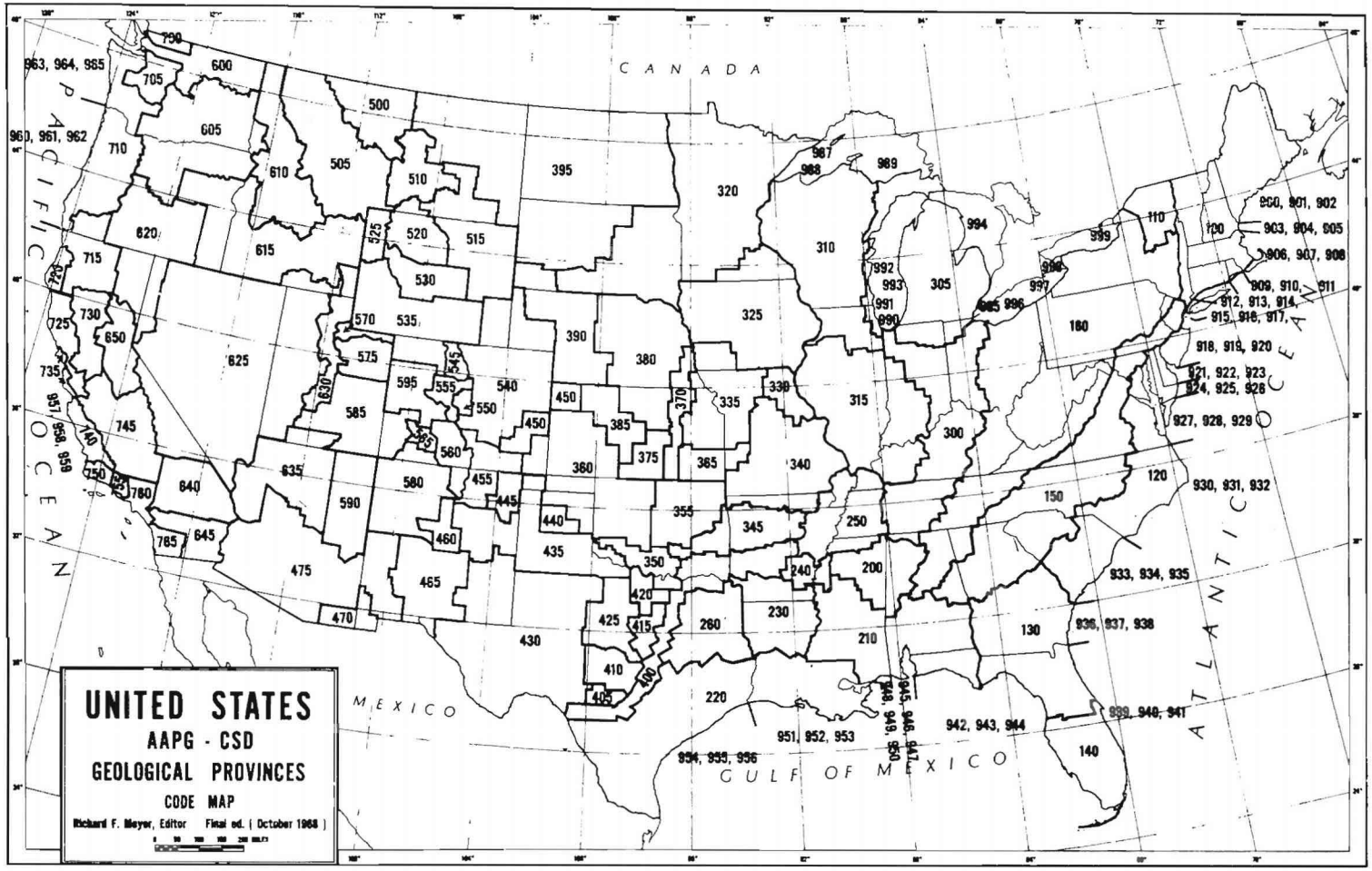

FIGURE 1. - Geologic provinces of the United States.

Code	Province
100	New England Province
110	Adirondack Uplift
120	Atlantic Coast Basin
130	South Georgia-North Florida Sedimentary Province
140	South Florida Province
150	Piedmont-Blue Ridge Province
160	Appalachian Basin
200	Warrior Basin
210	Mid-Gulf Coast Basin
220	Gulf Coast Basin
230	Arkla Basin
240	Desha Basin
250	Upper Mississippi Embayment
260	East Texas Basin
300	Cincinnati Arch
305	Michigan Basin
310	Wisconsin Arch
315	Illinois Basin
320	Sioux Uplift
325	Iowa Shelf
330	Lincoln Anticline
335	Forest City Basin
340	Ozark Uplift
345	Arkoma Basin
350	South Oklahoma Folded Belt Province
355	Chautauqua Platform
360	Anadarko Basin
365	Cherokee Basin
370	Nemaha Anticline
375	Sedgwick Basin
380	Salina Basin
385	Central Kansas Uplift
390	Chadron Arch
395	Williston Basin
400	Ouachita Tectonic Belt Province
405	Kerr Basin
410	Llano Uplift
415	Strawn Basin
420	Fort Worth Syncline
425	Bend Arch
430	Permian Basin
435	Palo Duro Basin
440	Amarillo Arch
445	Sierra Grande Uplift
450	Las Animas Arch
455	Las Vegas-Raton Basin
460	Estancia Basin
465	Orogrande Basin
470	Pedregosa Basin
475	Basin-and-Range Province

Code	Province
500	Sweetgrass Arch
505	Montana Folded Belt Province
510	Central Montana Uplift
515	Powder River Basin
520	Big Horn Basin
525	Yellowstone Province
530	Wind River Basin
535	Green River Basin
540	Denver Basin
545	North Park Basin
550	South Park Basin
555	Eagle Basin
560	San Luis Basin
565	San Juan Mountain Province
570	Uinta Uplift
575	Uinta Basin
580	San Juan Basin
585	Paradox Basin
590	Black Mesa Basin
595	Piceance Basin
600	Northern Cascade Range--Okanagan Province
605	Eastern Columbia Basin
610	Idaho Mountains Province
615	Snake River Basin
620	Southern Oregon Basin
625	Great Basin Province
630	Wasatch Uplift
635	Plateau Sedimentary Province
640	Mojave Basin
645	Salton Basin
650	Sierra Nevada Province
700	Bellingham Basin
705	Puget Sound Province
710	Western Columbia Basin
715	Klamath Mountains Province
720	Eel River Basin
725	Northern Coast Range Province
730	Sacramento Basin
735	Santa Cruz Basin
740	Coastal Basins
745	San Joaquin Basin
750	Santa Maria Basin
755	Ventura Basin
760	Los Angeles Basin
765	Capistrano Basin
800	Heceta Island Area
805	Keku Islands Area
810	Gulf of Alaska Basin
815	Copper River Basin
820	Cook Inlet Basin

Code	Province
830	Kandik Province
835	Kobuk Province
840	Koyukuk Province
845	Bristol Bay Basin
850	Bethel Basin
855	Norton Basin
860	Selawik Basin
863	Yukon Flats Basin
865	Lower Tanana Basin
867	Middle Tanana Basin
870	Upper Tanana Basin
873	Galena Basin
875	Innoko Basin
877	Minchumina Basin
880	Holitna Basin
885	Arctic Foothills Province
890	Arctic Slope Basin
900	Maine Atlantic offshore--general
901	Maine Atlantic offshore--State
902	Maine Atlantic offshore--Federal
903	New Hampshire Atlantic offshore--general
904	New Hampshire Atlantic offshore--State
905	New Hampshire Atlantic offshore--Federal
906	Massachusetts Atlantic offshore--general
907	Massachusetts Atlantic offshore--State
908	Massachusetts Atlantic offshore--Federal
909	Rhode Island Atlantic offshore--general
910	Rhode Island Atlantic offshore--State
911	Rhode Island Atlantic offshore--Federal
912	Connecticut Atlantic offshore--general
913	Connecticut Atlantic offshore--State
914	Connecticut Atlantic offshore--Federal
915	New York Atlantic offshore--general
916	New York Atlantic offshore--State
917	New York Atlantic offshore--Federal
918	New Jersey Atlantic offshore--general
919	New Jersey Atlantic offshore--State
920	New Jersey Atlantic offshore--Federal
921	Delaware Atlantic offshore--general
922	Delaware Atlantic offshore--State
923	Delaware Atlantic offshore--Federal
924	Maryland Atlantic offshore--general
925	Maryland Atlantic offshore--State
926	Maryland Atlantic offshore--Federal
927	Virginia Atlantic offshore--general
928	Virginia Atlantic offshore--State
929	Virginia Atlantic offshore--Federal
930	North Carolina Atlantic offshore--general
931	North Carolina Atlantic offshore--State
932	North Carolina Atlantic offshore--Federal
933	South Carolina Atlantic offshore--general
934	South Carolina Atlantic offshore--State

Code	Province
935	South Carolina Atlantic offshore--Federal
936	Georgia Atlantic offshore--general
937	Georgia Atlantic offshore--State
938	Georgia Atlantic offshore--Federal
939	Florida Atlantic offshore--general
940	Florida Atlantic offshore--State
941	Florida Atlantic offshore--Federal
942	Florida Gulf of Mexico offshore--general
943	Florida Gulf of Mexico offshore--State
944	Florida Gulf of Mexico offshore--Federal
945	Alabama Gulf of Mexico offshore--general
946	Alabama Gulf of Mexico offshore--State
947	Alabama Gulf of Mexico offshore--Federal
948	Mississippi Gulf of Mexico offshore--general
949	Mississippi Gulf of Mexico offshore--State
950	Mississippi Gulf of Mexico offshore--Federal
951	Louisiana Gulf of Mexico offshore--general
952	Louisiana Gulf of Mexico offshore--State
953	Louisiana Gulf of Mexico offshore--Federal
954	Texas Gulf of Mexico offshore--general
955	Texas Gulf of Mexico offshore--State
956	Texas Gulf of Mexico offshore--Federal
957	California Pacific offshore--general
958	California Pacific offshore--State
959	California Pacific offshore--Federal
960	Oregon Pacific offshore--general
961	Oregon Pacific offshore--State
962	Oregon Pacific offshore--Federal
963	Washington Pacific offshore--general
964	Washington Pacific offshore--State
965	Washington Pacific offshore--Federal
972	Alaska Arctic offshore--general
973	Alaska Arctic offshore--State
974	Alaska Arctic offshore--Federal
975	Alaska Bering Sea offshore--general
976	Alaska Bering Sea offshore--State
977	Alaska Bering Sea offshore--Federal
978	Alaska Pacific offshore--general
979	Alaska Pacific offshore--State
980	Alaska Pacific offshore--Federal
987	Minnesota Lake Superior offshore
988	Wisconsin Lake Superior offshore
989	Michigan Lake Superior offshore
990	Indiana Lake Michigan offshore
991	Illinois Lake Michigan offshore
992	Wisconsin Lake Michigan offshore
993	Michigan Lake Michigan offshore
994	Michigan Lake Huron offshore
995	Michigan Lake Erie offshore
996	Ohio Lake Erie offshore
997	Pennsylvania Lake Erie offshore
998	New York Lake Erie offshore
999	New York Lake Ontario offshore

TABLES

The following tables include the results of analyses and related source data from gas samples, which are divided into three groups as follows:

Table 1. - Samples from gas and oil wells in the United States.

Table 2. - Samples from pipelines in the United States.

Table 3. - Samples from gas and oil wells in foreign countries.

The following list indicates the sources of the samples listed in the tables:

Source	Number of samples	Tables	Source	Number of samples	Tables
Alabama.....	4	1	New York.....	4	1
Arkansas.....	19	1, 2	North Dakota.....	2	1
California.....	1	1	Ohio.....	1	2
Colorado.....	9	1	Oklahoma.....	45	1
Idaho.....	2	1	Pennsylvania.....	3	1, 2
Kansas.....	11	1	Tennessee.....	1	1
Kentucky.....	1	1	Texas.....	38	1, 2
Louisiana.....	6	1	Utah.....	3	1
Michigan.....	5	1	West Virginia.....	6	1, 2
Mississippi.....	7	1	Wyoming.....	5	1
Montana.....	1	1			
New Mexico.....	12	1	Canada.....	5	3

All components of the analyses in the tables are reported to the nearest 0.1%, except helium, which is reported to the nearest 0.01%. The word "Trace" is used to denote quantities of helium of less than 0.005% and quantities of other components of less than 0.05%.

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 1 SAMPLE 18360	INDEX 2 SAMPLE 18237	INDEX 3 SAMPLE 18276
STATE	ALABAMA	ALABAMA	ALABAMA
COUNTY	BALDWIN	FAYETTE	LAMAR
FIELD	GULF STATE PARK	TANYARD CREEK W	CORINTH
WELL NAME	GULF STATE PARK 12-10 NO. 1	U.S. STEEL 31-13 NO. 1	MCDONALD NO. 36-13
LOCATION	SEC. 12, T9S, R4E	SEC. 31, T14S, R10W	SEC. 36, T14S, R14W
OWNER	HUGHES EASTERN CORP.	TXO PRODUCTION CORP.	TERRA RESOURCES, INC.
COMPLETED	--/--/84	--/--/86	06/03/86
SAMPLED	04/28/87	10/20/86	11/25/86
FORMATION	MIOC-MEYER	MISS-CARTER	MISS-CARTER
GEOLOGIC PROVINCE CODE	210	200	200
DEPTH, FEET	1280	2359	2674
WELLHEAD PRESSURE,PSIG	305	NOT GIVEN	697
OPEN FLOW, MCFD	600	1970	9349
COMPONENT, MOLE PCT			
METHANE	93.1	95.7	96.6
ETHANE	0.0	1.9	2.3
PROPANE	TRACE	0.3	0.1
N-BUTANE	0.0	0.0	0.0
ISOBUTANE	0.0	0.1	0.1
N-PENTANE	0.0	0.0	0.0
ISOPENTANE	0.0	0.0	0.0
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.0	0.0
NITROGEN	5.8	1.5	0.7
OXYGEN	0.7	0.1	TRACE
ARGON	0.1	0.0	TRACE
HYDROGEN	TRACE	0.1	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.2	0.1	0.1
HELIUM	0.01	0.10	0.05
HEATING VALUE*	944	1015	1026
SPECIFIC GRAVITY	0.585	0.575	0.572

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 4 SAMPLE 18458	INDEX 5 SAMPLE 18364	INDEX 6 SAMPLE 18452
STATE	ALABAMA	ARKANSAS	ARKANSAS
COUNTY	LAMAR	CRAWFORD	FRANKLIN
FIELD	MOUNT CARMEL	SHIBLEY	AETNA
WELL NAME	HODO 31-15 NO. 1	MECHLING "A" NO. 1-26	DAVID PILE NO. 3-T
LOCATION	SEC. 31, T17S, R14W	SEC. 26, T9N, R31W	SEC. 19, T8N, R27W
OWNER	HOWELL PETROLEUM CORP.	ANADARKO PETROLEUM CORP.	ARKOMA PRODUCTION CO.
COMPLETED	--/--/87	02/04/87	07/02/87
SAMPLED	07/25/87	05/04/87	09/30/87
FORMATION	MISS-CARTER	PERM-ALMA	PENN-ARECI & DUNN C
GEOLOGIC PROVINCE CODE	200	345	345
DEPTH, FEET	4375	1390	6910
WELLHEAD PRESSURE,PSIG	1260	75	962
OPEN FLOW, MCFD	670	1000	1700
COMPONENT, MOLE PCT			
METHANE	91.7	95.2	98.0
ETHANE	5.7	0.9	1.1
PROPANE	0.0	0.1	0.3
N-BUTANE	0.3	0.0	0.0
ISOBUTANE	0.0	TRACE	TRACE
N-PENTANE	0.4	0.0	0.0
ISOPENTANE	0.0	0.0	0.0
CYCLOPENTANE	0.2	0.0	0.0
HEXANES PLUS	0.2	0.0	0.0
NITROGEN	0.8	2.9	0.4
OXYGEN	0.1	0.7	TRACE
ARGON	TRACE	TRACE	TRACE
HYDROGEN	0.0	0.1	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.6	TRACE	0.1
HELIUM	0.06	0.08	0.10
HEATING VALUE*	1075	985	1021
SPECIFIC GRAVITY	0.612	0.575	0.565

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 7 SAMPLE 18495	INDEX 8 SAMPLE 18373	INDEX 9 SAMPLE 18485
STATE	ARKANSAS	ARKANSAS	ARKANSAS
COUNTY	FRANKLIN	FRANKLIN	FRANKLIN
FIELD	AETNA	ROCK CREEK	URSULA
WELL NAME	WIEDERKEHR-SWIFT NO. 1-32	FEDERAL NO. 1-2	CARTWRIGHT "D" NO. 1-T
LOCATION	SEC. 32, T9N, R26W	SEC. 2, T11N, R26W	SEC. 27, T8N, R29W
OWNER	SEECO, INC.	KANEB OPERATING CO., LTD.	TXO PRODUCTION CORP.
COMPLETED	07/29/87	02/17/86	10/21/87
SAMPLED	12/04/87	05/27/87	10/24/87
FORMATION	ORDO-JENKINS	PENN-BARTON R & HALE M	PENN-HALE M
GEOLOGIC PROVINCE CODE	345	345	345
DEPTH, FEET	4878	1992	7452
WELLHEAD PRESSURE,PSIG	438	677	NOT GIVEN
OPEN FLOW, MCFD	5477	3237	4000
COMPONENT, MOLE PCT			
METHANE	97.6	96.3	95.9
ETHANE	1.3	1.7	1.3
PROPANE	0.2	0.4	0.2
N-BUTANE	0.0	0.0	0.0
ISOBUTANE	TRACE	0.2	TRACE
N-PENTANE	0.0	0.0	0.0
ISOPENTANE	0.0	0.0	0.0
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.0	0.0
NITROGEN	0.3	1.1	0.4
OXYGEN	0.0	0.0	TRACE
ARGON	0.0	0.0	TRACE
HYDROGEN	0.0	0.1	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.5	0.1	2.2
HELIUM	0.05	0.11	0.07
HEATING VALUE*	1018	1024	999
SPECIFIC GRAVITY	0.569	0.575	0.585

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 10 SAMPLE 18486	INDEX 11 SAMPLE 18487	INDEX 12 SAMPLE 18488
STATE	ARKANSAS	ARKANSAS	ARKANSAS
COUNTY	FRANKLIN	FRANKLIN	FRANKLIN
FIELD	URSULA	URSULA	URSULA
WELL NAME	CARTWRIGHT "D" NO. 1-C	MOORE "U" NO. 1-C	MOORE "U" NO. 1-T
LOCATION	SEC. 27, T8N, R29W	SEC. 34, T8N, R29W	SEC. 34, T8N, R29W
OWNER	TXO PRODUCTION CORP.	TXO PRODUCTION CORP.	TXO PRODUCTION CORP.
COMPLETED	10/21/87	10/21/87	10/21/87
SAMPLED	11/24/87	11/24/87	11/24/87
FORMATION	PENN-DUNN C	PENN-CARPENTER L	PENN-HALE M
GEOLOGIC PROVINCE CODE	345	345	345
DEPTH, FEET	6419	2995	2995
WELLHEAD PRESSURE,PSIG	NOT GIVEN	NOT GIVEN	NOT GIVEN
OPEN FLOW, MCFD	1300	1835	1840
COMPONENT, MOLE PCT			
METHANE	85.2	94.9	96.6
ETHANE	0.9	1.2	1.2
PROPANE	0.2	0.1	0.1
N-BUTANE	0.0	0.0	0.0
ISOBUTANE	TRACE	TRACE	TRACE
N-PENTANE	0.0	0.0	0.0
ISOPENTANE	0.0	0.0	0.0
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.0	0.0
NITROGEN	12.5	3.6	0.3
OXYGEN	0.0	TRACE	0.0
ARGON	TRACE	TRACE	0.0
HYDROGEN	0.0	0.0	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	1.1	0.1	1.7
HELIUM	0.12	0.09	0.07
HEATING VALUE*	884	987	1004
SPECIFIC GRAVITY	0.623	0.577	0.580

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 13 SAMPLE 18318	INDEX 14 SAMPLE 18319	INDEX 15 SAMPLE 18320
STATE	ARKANSAS	ARKANSAS	ARKANSAS
COUNTY	LOGAN	LOGAN	LOGAN
FIELD	BASHAM	FLETCHER CREEK	FLETCHER CREEK
WELL NAME	ANDERSON "R" NO. 1	HARWELL "A" NO. 1	FOSTER "F" NO. 1
LOCATION	SEC. 24, T5N, R28W	SEC. 23, T5N, R28W	SEC. 29, T5N, R28W
OWNER	TXO PRODUCTION CORP.	TXO PRODUCTION CORP.	TXO PRODUCTION CORP.
COMPLETED	01/09/86	08/07/85	07/12/85
SAMPLED	02/17/87	02/17/87	02/17/87
FORMATION	PENN-TURNER L	PERM-BASHAM	PERM-BASHAM
GEOLOGIC PROVINCE CODE	345	345	345
DEPTH, FEET	4288	4775	6436
WELLHEAD PRESSURE,PSIG	1780	16450	1500
OPEN FLOW, MCFD	1400	3300	2950
COMPONENT, MOLE PCT			
METHANE	88.2	97.3	94.5
ETHANE	1.4	1.4	1.6
PROPANE	0.2	0.2	0.2
N-BUTANE	0.0	0.0	0.0
ISOBUTANE	0.1	TRACE	TRACE
N-PENTANE	0.0	0.0	0.0
ISOPENTANE	0.0	0.0	0.0
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.0	0.0
NITROGEN	9.8	0.5	2.5
OXYGEN	0.0	0.0	0.0
ARGON	TRACE	0.0	0.0
HYDROGEN	0.1	0.1	TRACE
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.3	0.5	1.0
HELIUM	0.06	0.07	0.08
HEATING VALUE*	927	1016	991
SPECIFIC GRAVITY	0.608	0.570	0.583

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 16 SAMPLE 18400	INDEX 17 SAMPLE 18303	INDEX 18 SAMPLE 18325
STATE	ARKANSAS	ARKANSAS	ARKANSAS
COUNTY	LOGAN	POPE	POPE
FIELD	PRAIRIE VIEW	FERGERSON	KNOXVILLE
WELL NAME	SPICER NO. 1-21	BLAIR-LAWS "A" NO. 4-1	SMITH NO. 1-12
LOCATION	SEC. 21, T8N, R2W	SEC. 4, T8N, R20W	SEC. 12, T8N, R21W
OWNER	SANTA FE ENERGY CO.	KANEB OPERATING CO., LTD.	CNG PRODUCING CO.
COMPLETED	10/09/85	03/01/84	05/--/85
SAMPLED	07/14/87	--/--/87	03/09/87
FORMATION	PENN-HALE	NOT GIVEN	PENN-DUNN A
GEOLOGIC PROVINCE CODE	345	345	345
DEPTH, FEET	7348	6205	4340
WELLHEAD PRESSURE,PSIG	700	1883	668
OPEN FLOW, MCFD	300	3514	5000
COMPONENT, MOLE PCT			
METHANE	92.2	96.9	95.9
ETHANE	1.1	1.1	0.9
PROPANE	0.2	0.2	0.1
N-BUTANE	0.0	0.0	0.0
ISOBUTANE	TRACE	TRACE	0.0
N-PENTANE	0.0	0.0	0.0
ISOPENTANE	TRACE	0.0	0.0
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.0	0.0
NITROGEN	1.1	0.6	1.6
OXYGEN	0.1	TRACE	0.2
ARGON	0.0	0.0	TRACE
HYDROGEN	0.2	0.1	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	4.8	0.9	1.1
HELIUM	0.10	0.12	0.23
HEATING VALUE*	961	1007	991
SPECIFIC GRAVITY	0.613	0.572	0.578

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 19 SAMPLE 18498	INDEX 20 SAMPLE 18271	INDEX 21 SAMPLE 18428
STATE	ARKANSAS	ARKANSAS	ARKANSAS
COUNTY	SEBASTIAN	SEBASTIAN	SEBASTIAN
FIELD	CECIL	CHISMVILLE	GRAGG
WELL NAME	C. WRIGHT NO. 2-B	FT. CHAFFEE NO. 2	LYDA "B" NO. 2-C
LOCATION	SEC. 36, T9N, R30W	SEC. 13, T6N, R29W	SEC. 22, T6N, R29W
OWNER	ARKOMA PRODUCTION CO.	EXXON CO., U.S.A.	HANNA OIL & GAS CO.
COMPLETED	09/04/87	05/19/86	05/23/87
SAMPLED	12/10/87	11/19/86	08/25/87
FORMATION	PENN-CARPENTER	PENN-NICHOLS & TURNER	PENN-BORUM
GEOLOGIC PROVINCE CODE	345	345	345
DEPTH, FEET	1660	3365	5773
WELLHEAD PRESSURE,PSIG	150	919	NOT GIVEN
OPEN FLOW, MCFD	1400	2581	6997
COMPONENT, MOLE PCT			
METHANE	98.2	93.2	92.1
ETHANE	1.1	1.3	1.4
PROPANE	0.1	0.1	0.2
N-BUTANE	0.0	0.0	0.0
ISOBUTANE	0.0	TRACE	TRACE
N-PENTANE	0.0	0.0	0.0
ISOPENTANE	0.0	0.0	TRACE
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.0	0.0
NITROGEN	0.4	4.7	4.6
OXYGEN	0.0	0.2	1.1
ARGON	0.0	0.1	0.1
HYDROGEN	TRACE	0.1	0.4
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	TRACE	0.3	TRACE
HELIUM	0.09	0.06	0.07
HEATING VALUE*	1018	970	966
SPECIFIC GRAVITY	0.563	0.586	0.587

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 22 SAMPLE 18429	INDEX 23 SAMPLE 18499	INDEX 24 SAMPLE 18469
STATE	ARKANSAS	CALIFORNIA	COLORADO
COUNTY	SEBASTIAN	SOLANO	GARFIELD
FIELD	GRAGG	MAINE PRAIRIE	WILDCAT
WELL NAME	LYDA "B" NO. 2-T	ZANETTI NO. 1	ARCO DEEP NO. 1-27
LOCATION	SEC. 22, T6N, R29W	SEC. 23, T6N, R2E	SEC. 27, T6S, R97W
OWNER	HANNA OIL & GAS CO.	AMERADA HESS CORP.	BARRETT ENERGY CO.
COMPLETED	05/23/87	08/25/87	08/15/87
SAMPLED	08/25/87	12/14/87	11/03/87
FORMATION	PENN-BORUM	PERM-MOKELUMNE	CRET-CAMEO
GEOLOGIC PROVINCE CODE	345	730	595
DEPTH, FEET	5773	5333	8149
WELLHEAD PRESSURE,PSIG	NOT GIVEN	1600	2600
OPEN FLOW, MCFD	6997	1200	1300
COMPONENT, MOLE PCT			
METHANE	92.0	94.2	87.1
ETHANE	1.4	3.0	3.0
PROPANE	0.2	0.2	0.4
N-BUTANE	0.0	0.0	0.2
ISOBUTANE	TRACE	0.1	0.1
N-PENTANE	0.0	0.0	0.0
ISOPENTANE	TRACE	TRACE	0.2
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.0	0.0
NITROGEN	2.5	2.5	0.1
OXYGEN	0.6	0.0	TRACE
ARGON	TRACE	0.0	TRACE
HYDROGEN	0.3	0.0	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	2.8	0.1	8.9
HELIUM	0.07	TRACE	TRACE
HEATING VALUE*	966	1017	964
SPECIFIC GRAVITY	0.604	0.584	0.669

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 25 SAMPLE 18433	INDEX 26 SAMPLE 18362	INDEX 27 SAMPLE 18301
STATE	COLORADO	COLORADO	COLORADO
COUNTY	LA PLATA	MOFFAT	MONTEZUMA
FIELD	IGNACIO-BLANCO	DANFORTH HILLS	MCELMO
WELL NAME	FARMER NO. 1	GOVT.-TRELEAVEN NO. 11	DEAN DUDLEY NO. 4
LOCATION	SEC. 15, T32N, R11W	SEC. 31, T5N, R95W	SEC. 13, T36N, R18W
OWNER	UNION TEXAS PETROLEUM CORP.	TEXACO INC.	AMERIGAS, INC.
COMPLETED	01/14/84	07/24/86	--/--/87
SAMPLED	09/04/87	04/29/87	02/12/87
FORMATION	CRET-CLIFF HOUSE & MENEFEE	PENN-MINTURN	TRIA-SHINARUMP
GEOLOGIC PROVINCE CODE	580	535	585
DEPTH, FEET	4784	9698	1725
WELLHEAD PRESSURE,PSIG	900	2486	300
OPEN FLOW, MCFD	1318	1760	NOT GIVEN
COMPONENT, MOLE PCT			
METHANE	83.0	68.4	56.0
ETHANE	9.2	9.5	4.7
PROPANE	3.9	4.4	1.5
N-BUTANE	1.1	2.1	0.4
ISOBUTANE	0.3	0.0	0.7
N-PENTANE	0.4	0.4	0.0
ISOPENTANE	0.1	0.0	0.2
CYCLOPENTANE	0.1	0.0	0.0
HEXANES PLUS	0.1	0.0	0.1
NITROGEN	0.4	11.3	34.8
OXYGEN	0.0	0.1	TRACE
ARGON	0.0	0.7	0.1
HYDROGEN	0.0	0.1	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	1.2	2.6	0.3
HELIUM	TRACE	0.25	1.06
HEATING VALUE*	1192	1066	741
SPECIFIC GRAVITY	0.691	0.763	0.758

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 28 SAMPLE 18302	INDEX 29 SAMPLE 18299	INDEX 30 SAMPLE 18300
STATE	COLORADO	COLORADO	COLORADO
COUNTY	MONTEZUMA	MONTEZUMA	MONTEZUMA
FIELD	MCELMO	MCELMO DOME UNIT	MCELMO DOME UNIT
WELL NAME	SCHMIDT NO. 3	DEAN DUDLEY NO. 3	SCHMIDT NO. 2
LOCATION	SEC. 24, T36N, R18W	SEC. 13, T36N, R28W	SEC. 24, T36N, R18W
OWNER	AMERIGAS, INC.	AMERIGAS, INC.	AMERIGAS, INC.
COMPLETED	--/--/87	--/--/87	--/--/87
SAMPLED	02/12/87	02/12/87	02/12/87
FORMATION	TRIA-SHINARUMP	MISS-LEADVILLE	MISS-LEADVILLE
GEOLOGIC PROVINCE CODE	585	585	585
DEPTH, FEET	1725	6700	6700
WELLHEAD PRESSURE,PSIG	300	900	900
OPEN FLOW, MCFD	NOT GIVEN	NOT GIVEN	NOT GIVEN
COMPONENT, MOLE PCT			
METHANE	55.3	0.1	0.1
ETHANE	5.0	0.0	0.0
PROPANE	1.7	0.0	0.0
N-BUTANE	0.3	0.0	0.0
ISOBUTANE	0.6	0.1	0.1
N-PENTANE	0.1	0.0	0.0
ISOPENTANE	0.1	TRACE	0.0
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.1	0.0	0.0
NITROGEN	34.9	2.0	1.9
OXYGEN	0.0	0.1	TRACE
ARGON	0.1	TRACE	TRACE
HYDROGEN	0.1	0.0	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.6	97.5	97.6
HELIUM	1.03	0.10	0.09
HEATING VALUE*	738	4	5
SPECIFIC GRAVITY	0.762	1.514	1.513

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 31 SAMPLE 18363	INDEX 32 SAMPLE 18445	INDEX 33 SAMPLE 18457
STATE	COLORADO	COLORADO	IDAHO
COUNTY	RIO BLANCO	WELD	CASSIA
FIELD	GREATER DOUGLAS CREEK ARCH	ARISTOCRAT	NOT GIVEN
WELL NAME	FORK UNIT NO. 14-14-1-2	GUN CLUB UPRR NO. 41-3	BRIDGE SPRING
LOCATION	SEC. 14, T1S, R102W	SEC. 3, T3N, R65W	T15S, R26E
OWNER	CHANDLER & ASSOCIATES, INC.	BASIN EXPLORATION, INC.	CRAFTS, MARK
COMPLETED	03/12/85	10/10/86	--/--/87
SAMPLED	05/04/87	09/24/87	10/18/87
FORMATION	CRET-MANCOS B	CRET-CODELL & NIOBRARA	NOT GIVEN
GEOLOGIC PROVINCE CODE	560	540	625
DEPTH, FEET	2350	6783	NOT GIVEN
WELLHEAD PRESSURE,PSIG	214	3900	NOT GIVEN
OPEN FLOW, MCFD	175	1354	NOT GIVEN
COMPONENT, MOLE PCT			
METHANE	80.3	73.7	0.4
ETHANE	6.2	13.9	0.1
PROPANE	3.8	5.4	0.0
N-BUTANE	1.1	1.9	0.0
ISOBUTANE	0.9	0.7	TRACE
N-PENTANE	0.2	0.6	0.0
ISOPENTANE	0.3	0.1	0.1
CYCLOPENTANE	TRACE	0.1	0.0
HEXANES PLUS	0.2	0.2	0.0
NITROGEN	5.6	0.3	93.2
OXYGEN	1.0	TRACE	0.1
ARGON	TRACE	TRACE	2.0
HYDROGEN	0.0	0.0	0.1
HYDROGEN SULFIDE**	0.0	TRACE	0.0
CARBON DIOXIDE	0.2	3.1	3.8
HELIUM	0.12	TRACE	0.17
HEATING VALUE*	1124	1265	11
SPECIFIC GRAVITY	0.699	0.768	0.995

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 34 SAMPLE 18456	INDEX 35 SAMPLE 18354	INDEX 36 SAMPLE 18390
STATE	IDAHO	KANSAS	KANSAS
COUNTY	FRANKLIN	BARBER	BARBER
FIELD	NOT GIVEN	AMBER HILLS EXT.	MCGUIRE-GOEMANN EXT.
WELL NAME	SQUAW HOT SPRINGS	PIKE NO. 1	SCRIPSICK NO. 2
LOCATION	T15S, R39E	SEC. 9, T31S, R12W	SEC. 18, T32S, R10W
OWNER	CRAFTS, MARK	SOURCE PETROLEUM	BRADEN-DEEM, INC.
COMPLETED	--/--/87	07/21/86	01/--/86
SAMPLED	10/12/87	04/22/87	06/27/87
FORMATION	NOT GIVEN	PENN-MISS	PENN-CHEROKEE
GEOLOGIC PROVINCE CODE	625	375	375
DEPTH, FEET	NOT GIVEN	4400	4363
WELLHEAD PRESSURE,PSIG	NOT GIVEN	1537	1200
OPEN FLOW, MCFD	NOT GIVEN	750	2519
COMPONENT, MOLE PCT			
METHANE	1.0	78.6	90.4
ETHANE	0.2	6.0	4.3
PROPANE	0.0	3.1	2.1
N-BUTANE	0.3	0.8	0.4
ISOBUTANE	0.0	0.4	0.6
N-PENTANE	0.0	0.2	0.0
ISOPENTANE	0.4	0.2	0.1
CYCLOPENTANE	0.0	0.1	0.0
HEXANES PLUS	0.0	0.1	0.0
NITROGEN	4.2	6.7	2.0
OXYGEN	0.2	TRACE	0.0
ARGON	0.1	TRACE	0.0
HYDROGEN	0.0	0.1	TRACE
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	93.5	3.1	0.1
HELIUM	0.05	0.50	0.10
HEATING VALUE*	42	1051	1083
SPECIFIC GRAVITY	1.499	0.700	0.621

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 37 SAMPLE 18351	INDEX 38 SAMPLE 18477	INDEX 39 SAMPLE 18289
STATE	KANSAS	KANSAS	KANSAS
COUNTY	COMANCHE	COMANCHE	HARPER
FIELD	NESCATUNGA S	NOT GIVEN	SULLIVAN
WELL NAME	KIMBLE NO. 1	BOOTH NO. 1	KISER NO. 2
LOCATION	SEC. 35, T32S, R28W	SEC. 23, T32S, R17W	SEC. 36, T32S, R9W
OWNER	AMERICAN ENERGIES CORP.	MIDCO EXPLORATION, INC.	KBW OIL & GAS CO.
COMPLETED	07/06/84	09/30/84	11/14/86
SAMPLED	04/19/87	11/13/87	01/16/87
FORMATION	ORDO-VIOLA	PENN-MISS	PENN-WABAUNSEE
GEOLOGIC PROVINCE CODE	360	360	375
DEPTH, FEET	5600	5124	3050
WELLHEAD PRESSURE,PSIG	1620	NOT GIVEN	1150
OPEN FLOW, MCFD	1346	2464	1000
COMPONENT, MOLE PCT			
METHANE	77.7	92.9	79.7
ETHANE	5.7	3.5	3.4
PROPANE	2.7	1.2	2.8
N-BUTANE	0.7	0.5	0.9
ISOBUTANE	0.3	0.0	0.6
N-PENTANE	0.2	0.1	0.2
ISOPENTANE	0.1	0.3	0.2
CYCLOPENTANE	TRACE	0.0	0.0
HEXANES PLUS	0.1	0.0	0.1
NITROGEN	11.3	1.2	11.5
OXYGEN	TRACE	0.0	0.3
ARGON	0.1	TRACE	0.0
HYDROGEN	0.1	0.0	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.3	0.1	0.1
HELIUM	0.50	0.08	0.31
HEATING VALUE*	1011	1071	1014
SPECIFIC GRAVITY	0.680	0.606	0.682

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 40 SAMPLE 18358	INDEX 41 SAMPLE 18277	INDEX 42 SAMPLE 18327
STATE	KANSAS	KANSAS	KANSAS
COUNTY	KIOWA	LEAVENWORTH	MEADE
FIELD	NICHOLS	LAMBORN	HOCKETT SE
WELL NAME	HIEBSH NO. 2	JONES ET AL NO. 1	HARRIS 34 NO. 1
LOCATION	SEC. 27, T29S, R28W	SEC. 14, T9S, R22E	SEC. 34, T31S, R29W
OWNER	VINCENT OIL CORP.	BERKY RESOURCES CORP.	COBRA OIL & GAS CORP.
COMPLETED	05/15/85	06/25/86	05/30/85
SAMPLED	04/25/87	11/28/86	03/11/87
FORMATION	PENN-MARMATON	PENN-BURGESS	MISS-CHESTER
GEOLOGIC PROVINCE CODE	360	335	360
DEPTH, FEET	4800	1196	5564
WELLHEAD PRESSURE,PSIG	1050	420	1500
OPEN FLOW, MCFD	1250	520	10900
COMPONENT, MOLE PCT			
METHANE	72.0	96.2	84.1
ETHANE	5.8	0.0	0.8
PROPANE	5.1	0.2	0.1
N-BUTANE	3.6	0.0	0.0
ISOBUTANE	0.0	0.2	TRACE
N-PENTANE	1.2	0.0	0.0
ISOPENTANE	0.0	TRACE	0.0
CYCLOPENTANE	0.1	0.0	0.0
HEXANES PLUS	0.2	0.0	0.0
NITROGEN	6.6	2.0	10.6
OXYGEN	TRACE	0.1	2.7
ARGON	1.0	TRACE	0.1
HYDROGEN	0.1	0.1	TRACE
HYDROGEN SULFIDE**	0.0	0.0	0.1
CARBON DIOXIDE	4.1	1.1	1.4
HELIUM	0.16	0.11	0.14
HEATING VALUE*	1156	987	870
SPECIFIC GRAVITY	0.794	0.578	0.633

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 43 SAMPLE 18424	INDEX 44 SAMPLE 18288	INDEX 45 SAMPLE 18440
STATE	KANSAS	KANSAS	KANSAS
COUNTY	MORTON	RICE	SEWARD
FIELD	WINTER N	CHASE-SILICA	NOT GIVEN
WELL NAME	SANTA FE NO. 2-14	COLDWATER "C" NO. 1	COVEL TRUST NO. 1-24
LOCATION	SEC. 14, T33S, R43W	SEC. 17, T20S, R9W	SEC. 24, T31S, R32W
OWNER	SANTA FE ENERGY CO.	HIEBERT & WEDEL OIL PROP.	ENSIGN OPERATING CO.
COMPLETED	07/10/85	07/15/86	02/24/87
SAMPLED	08/--/87	01/13/87	09/09/87
FORMATION	PENN-MORROW	PENN-TARKIO	PENN-MORROW
GEOLOGIC PROVINCE CODE	360	385	360
DEPTH, FEET	4582	2236	5475
WELLHEAD PRESSURE,PSIG	379	675	1219
OPEN FLOW, MCFD	2017	710	1503
COMPONENT, MOLE PCT			
METHANE	70.7	64.0	72.3
ETHANE	8.6	2.1	5.2
PROPANE	6.6	1.9	2.6
N-BUTANE	1.4	0.6	0.9
ISOBUTANE	0.7	0.8	0.1
N-PENTANE	0.1	0.3	0.4
ISOPENTANE	0.5	0.0	0.1
CYCLOPENTANE	0.0	TRACE	0.1
HEXANES PLUS	0.0	0.2	0.2
NITROGEN	10.6	29.1	15.2
OXYGEN	0.0	0.1	2.4
ARGON	TRACE	0.1	0.1
HYDROGEN	0.3	TRACE	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.3	TRACE	0.1
HELIUM	0.14	0.84	0.12
HEATING VALUE*	1139	805	962
SPECIFIC GRAVITY	0.752	0.734	0.715

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 46 SAMPLE 18401	INDEX 47 SAMPLE 18361	INDEX 48 SAMPLE 18404
STATE	KENTUCKY	LOUISIANA	LOUISIANA
COUNTY	HARLAN	CAMERON	CLAIBORNE
FIELD	LOONEY CREEK	GRAND LAKE	BLACKBURN
WELL NAME	PENN. VA. KY. RESOURCES NO.1	STATE LEASE 11728 NO. 1	A. B. TINSLEY ESTATE NO. 1
LOCATION	APPALACHIA QUAD., 18F, 80E	SEC. 36, T13S, R5W	SEC. 30, T22N, R7W
OWNER	ANR PRODUCTION CO.	HUNT OIL CO.	WHELESS INDUSTRIES, INC.
COMPLETED	07/01/86	02/28/86	11/05/86
SAMPLED	07/13/87	04/29/87	07/17/87
FORMATION	DEVO-WEIR SHALE	NOT GIVEN	JURA-COTTON VALLEY
GEOLOGIC PROVINCE CODE	160	220	230
DEPTH, FEET	5692	15980	9206
WELLHEAD PRESSURE,PSIG	909	6000	2600
OPEN FLOW, MCFD	1111	1500	1145
COMPONENT, MOLE PCT			
METHANE	75.6	81.8	72.0
ETHANE	10.7	7.3	13.9
PROPANE	3.4	3.7	7.1
N-BUTANE	0.7	2.3	1.9
ISOBUTANE	0.3	0.0	0.5
N-PENTANE	0.1	0.8	0.4
ISOPENTANE	0.3	0.0	0.4
CYCLOPENTANE	0.0	TRACE	0.0
HEXANES PLUS	0.1	0.2	0.2
NITROGEN	6.0	0.0	1.2
OXYGEN	1.5	0.0	0.0
ARGON	0.7	0.7	TRACE
HYDROGEN	0.4	0.1	0.2
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.1	3.0	2.0
HELIUM	0.04	TRACE	0.02
HEATING VALUE*	1104	1179	1292
SPECIFIC GRAVITY	0.705	0.719	0.776

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 49 SAMPLE 18255	INDEX 50 SAMPLE 18395	INDEX 51 SAMPLE 18349
STATE	LOUISIANA	LOUISIANA	LOUISIANA
PARISH	JACKSON	JEFFERSON DAVIS	ST. MARTIN
FIELD	CLAY	LAKE ARTHUR	BAYOU CROOK CHENE
WELL NAME	KMI CONTINENTAL ROYALTY NO.1	FANNIE E. WINN NO. 1	DOW CHEMICAL CO. NO. 1
LOCATION	SEC. 33, T17N, R3W	SEC. 7, T11S, R3W	SEC. 34, T20S, R9E
OWNER	SUN EXPLORATION & PRODUCTION	POGO PRODUCING CO.	SANDEFER OIL & GAS CO.
COMPLETED	05/15/86	06/--/86	--/--/86
SAMPLED	11/17/86	06/26/87	11/13/86
FORMATION	JURA-COTTON VALLEY & DAVIS	OLIG-MIOGYP	OLIG-MARGINULINA
GEOLOGIC PROVINCE CODE	230	220	220
DEPTH, FEET	11154	16978	12860
WELLHEAD PRESSURE,PSIG	8027	11000	6950
OPEN FLOW, MCFD	7219	45000	2041
COMPONENT, MOLE PCT			
METHANE	95.1	91.9	86.0
ETHANE	1.2	2.9	8.0
PROPANE	0.3	0.9	3.3
N-BUTANE	0.0	0.0	0.5
ISOBUTANE	0.2	0.5	0.6
N-PENTANE	0.0	0.0	0.1
ISOPENTANE	TRACE	0.0	TRACE
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.0	0.1
NITROGEN	0.2	0.5	0.8
OXYGEN	TRACE	0.0	TRACE
ARGON	0.0	0.0	TRACE
HYDROGEN	0.6	TRACE	TRACE
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	2.5	3.3	0.6
HELIUM	TRACE	TRACE	TRACE
HEATING VALUE*	1001	1022	1147
SPECIFIC GRAVITY	0.589	0.619	0.657

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 52 SAMPLE 18378	INDEX 53 SAMPLE 18434	INDEX 54 SAMPLE 18446
STATE	LOUISIANA	MICHIGAN	MICHIGAN
PARISH	WASHINGTON	ARENAC	MONTMORENCY
FIELD	ANGIE	CLAYTON	VIENNA
WELL NAME	O. ROBBINS NO. 1	SEIGNIOUS UNIT NO. 1-10	STATE VIENNA NO. 1-32
LOCATION	SEC. 52, T1S, R14E	SEC. 10, T20N, R4W	SEC. 32, T31N, R1E
OWNER	MOSBACHER ENERGY CO.	AMOCO PRODUCTION CO.	SHELL WESTERN EXP. & PROD.,
COMPLETED	--/--/86	10/21/87	12/11/86
SAMPLED	06/12/87	09/10/87	09/22/87
FORMATION	CRET-JAMES LIME	ORDO-PRAIRIE DU CHIEN	SILU-NIAGARAN
GEOLOGIC PROVINCE CODE	220	305	305
DEPTH, FEET	14466	10681	5931
WELLHEAD PRESSURE,PSIG	5600	3854	2396
OPEN FLOW, MCFD	2900	1950	160142
COMPONENT, MOLE PCT			
METHANE	94.6	80.9	86.6
ETHANE	0.1	8.3	6.7
PROPANE	0.1	3.1	2.9
N-BUTANE	0.0	1.2	1.0
ISOBUTANE	0.1	0.5	0.7
N-PENTANE	0.0	0.6	0.4
ISOPENTANE	0.0	0.1	0.1
CYCLOPENTANE	0.0	0.1	0.1
HEXANES PLUS	0.0	0.3	0.2
NITROGEN	1.1	4.6	1.2
OXYGEN	0.0	0.0	0.1
ARGON	0.0	0.0	TRACE
HYDROGEN	TRACE	0.0	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	4.0	0.2	0.1
HELIUM	0.02	0.04	0.02
HEATING VALUE*	965	1157	1162
SPECIFIC GRAVITY	0.600	0.697	0.663

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 55 SAMPLE 18426	INDEX 56 SAMPLE 18413	INDEX 57 SAMPLE 18494
STATE	MICHIGAN	MICHIGAN	MICHIGAN
COUNTY	NEWAYGO	NEWAYGO	OAKLAND
FIELD	DENVER TOWNSHIP	HUBER	LYON S
WELL NAME	SCHROPP NO. 1-9	VANDERLEY & MILLS NO. 1-5A	RANDALL NO. 1-29
LOCATION	SEC. 19, T14N, R14W	SEC. 5, T14N, R14W	SEC. 29, T1N, R7E
OWNER	TERRA ENERGY, LTD.	TERRA ENERGY, LTD.	SOMOCO, INC.
COMPLETED	02/13/87	09/15/86	03/07/86
SAMPLED	08/25/87	07/25/87	12/07/87
FORMATION	SILU-CLINTON	ORDO-PRAIRIE DU CHIEN	SILU-NIAGARAN
GEOLOGIC PROVINCE CODE	305	305	305
DEPTH, FEET	5325	6300	3577
WELLHEAD PRESSURE,PSIG	1950	1900	NOT GIVEN
OPEN FLOW, MCFD	1200	9000	1000
COMPONENT, MOLE PCT			
METHANE	88.3	69.2	79.6
ETHANE	4.4	6.3	7.8
PROPANE	1.8	2.5	2.8
N-BUTANE	0.6	0.7	0.5
ISOBUTANE	0.5	0.6	0.9
N-PENTANE	0.2	0.5	0.0
ISOPENTANE	0.3	0.0	0.2
CYCLOPENTANE	0.0	0.1	0.0
HEXANES PLUS	0.2	0.5	0.0
NITROGEN	1.8	17.9	7.9
OXYGEN	0.1	1.2	0.0
ARGON	1.0	0.1	TRACE
HYDROGEN	0.4	0.2	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	TRACE	0.1	0.1
HELIUM	0.05	0.15	0.11
HEATING VALUE*	1098	973	1075
SPECIFIC GRAVITY	0.643	0.735	0.680

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 58 SAMPLE 18292	INDEX 59 SAMPLE 18470	INDEX 60 SAMPLE 18380
STATE	MISSISSIPPI	MISSISSIPPI	MISSISSIPPI
COUNTY	COVINGTON	HOLMES	LEE
FIELD	MCRANEY	TCHULA LAKE	SHANNON
WELL NAME	JOSEPH DALE NO. 2	SHADRACH DAVIS, JR., NO. 1	WEST 25-4 NO. 1
LOCATION	SEC. 3, T7N, R17W	SEC. 8, T15N, R1W	SEC. 25, T11S, R5E
OWNER	UNION OIL CO. OF CALIFORNIA	TRIAD OIL & GAS CO.	MOON-HINES-TIGRETT OPERATING
COMPLETED	01/10/87	03/07/87	--/--/87
SAMPLED	01/28/87	07/15/87	06/17/87
FORMATION	CRET-HOSSTON & HARPER	JURA-SMACKOVER	MISS-CARTER
GEOLOGIC PROVINCE CODE	210	210	200
DEPTH, FEET	15296	9832	1517
WELLHEAD PRESSURE,PSIG	4325	2835	530
OPEN FLOW, MCFD	1000	4639	1240
COMPONENT, MOLE PCT			
METHANE	91.9	41.6	97.0
ETHANE	0.6	5.5	0.3
PROPANE	0.3	3.1	TRACE
N-BUTANE	0.1	2.0	0.0
ISOBUTANE	0.1	1.7	0.0
N-PENTANE	0.1	0.7	0.0
ISOPENTANE	0.2	0.6	0.0
CYCLOPENTANE	0.0	TRACE	0.0
HEXANES PLUS	0.0	0.3	0.0
NITROGEN	2.9	2.1	2.2
OXYGEN	0.0	0.0	TRACE
ARGON	TRACE	TRACE	0.0
HYDROGEN	0.1	TRACE	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	3.7	42.3	0.2
HELIUM	0.04	0.01	0.12
HEATING VALUE*	969	796	990
SPECIFIC GRAVITY	0.617	1.122	0.567

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 61 SAMPLE 18382	INDEX 62 SAMPLE 18296	INDEX 63 SAMPLE 18430
STATE	MISSISSIPPI	MISSISSIPPI	MISSISSIPPI
COUNTY	LEE	PERRY	WARREN
FIELD	SHANNON	TIGER	OAK RIDGE
WELL NAME	MARY RUTHERFORD NO. 1	MCLAURIN 4-13 NO. 1	BILLY BROWN 20-11 NO. 1
LOCATION	SEC. 17, T11S, R6E	SEC. 4, T5N, R10W	SEC. 20, T17W, R5E
OWNER	ENSOURCE, INC.	UNION OIL CO. OF CALIFORNIA	UNION OIL CO. OF CALIFORNIA
COMPLETED	--/--/87	07/29/77	09/11/80
SAMPLED	06/17/87	02/11/87	08/25/87
FORMATION	CRET-LEWIS	CRET-HOSSTON	CRET-RODESSA
GEOLOGIC PROVINCE CODE	200	210	210
DEPTH, FEET	2058	14441	11260
WELLHEAD PRESSURE,PSIG	675	2300	3785
OPEN FLOW, MCFD	1557	200	7000
COMPONENT, MOLE PCT			
METHANE	94.8	84.0	93.0
ETHANE	0.6	6.2	0.8
PROPANE	0.1	3.0	0.2
N-BUTANE	0.0	1.0	0.5
ISOBUTANE	TRACE	1.0	0.0
N-PENTANE	0.0	0.4	0.3
ISOPENTANE	0.0	0.2	0.1
CYCLOPENTANE	0.0	0.0	0.1
HEXANES PLUS	0.0	0.3	0.2
NITROGEN	3.8	1.4	2.4
OXYGEN	0.5	0.0	TRACE
ARGON	TRACE	0.0	0.0
HYDROGEN	TRACE	TRACE	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.2	3.2	2.5
HELIUM	0.06	0.02	0.03
HEATING VALUE*	973	1148	1004
SPECIFIC GRAVITY	0.578	0.705	0.614

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 64 SAMPLE 18432	INDEX 65 SAMPLE 18496	INDEX 66 SAMPLE 18331
STATE	MISSISSIPPI	MONTANA	NEW MEXICO
COUNTY	WARREN	BLAINE	EDDY
FIELD	OAK RIDGE	SAWTOOTH MOUNTAIN	ANTELOPE SINK
WELL NAME	BILLY BROWN 20-11 NO. 2	CAMPBELL NO. 9-4	PANOS FED. COMM NO. 1
LOCATION	SEC. 20, T17N, R5E	SEC. 4, T27N, R19E	SEC. 1, T19S, R23E
OWNER	UNION OIL CO. OF CALIFORNIA	MONTANA POWER CO.	EXXON CO., U.S.A.
COMPLETED	09/08/82	07/23/86	10/01/85
SAMPLED	08/25/87	12/09/87	03/12/87
FORMATION	CRET-HOSSTON	CRET-EAGLE	PENN-STRAWN
GEOLOGIC PROVINCE CODE	210	395	430
DEPTH, FEET	12378	1512	7650
WELLHEAD PRESSURE,PSIG	3780	410	1550
OPEN FLOW, MCFD	1500	1000	566
COMPONENT, MOLE PCT			
METHANE	93.0	85.0	90.4
ETHANE	0.8	2.8	4.5
PROPANE	0.2	1.5	1.6
N-BUTANE	0.5	0.3	0.3
ISOBUTANE	0.0	0.5	0.6
N-PENTANE	0.3	0.0	0.0
ISOPENTANE	0.1	0.1	0.1
CYCLOPENTANE	0.1	0.0	TRACE
HEXANES PLUS	0.2	0.0	0.2
NITROGEN	2.4	9.6	1.5
OXYGEN	TRACE	0.0	0.2
ARGON	0.0	TRACE	TRACE
HYDROGEN	0.0	0.0	TRACE
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	2.5	TRACE	0.5
HELIUM	0.04	0.08	0.04
HEATING VALUE*	1004	983	1083
SPECIFIC GRAVITY	0.614	0.638	0.625

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 67 SAMPLE 18397	INDEX 68 SAMPLE 18396	INDEX 69 SAMPLE 18453
STATE	NEW MEXICO	NEW MEXICO	NEW MEXICO
COUNTY	EDDY	EDDY	EDDY
FIELD	LOCO HILLS	SALADAR	SHEP DRAW NE
WELL NAME	CEDAR LAKE "ADI" NO. 1	STONEWALL EP STATE NO. 4	HAPPY VALLEY FEDERAL NO. 1
LOCATION	SEC. 26, T17S, R30E	SEC. 30, T20S, R28E	SEC. 28, T22S, R26E
OWNER	YATES PETROLEUM CORP.	YATES PETROLEUM CORP.	EXXON CO., U.S.A.
COMPLETED	--/--/86	--/--/86	--/--/86
SAMPLED	07/01/87	07/01/87	--/--/87
FORMATION	PENN-ATOKA	PENN-STRAWN	PENN-STRAWN
GEOLOGIC PROVINCE CODE	430	430	430
DEPTH, FEET	10673	10126	10294
WELLHEAD PRESSURE,PSIG	2145	2150	3640
OPEN FLOW, MCFD	2500	5000	5200
COMPONENT, MOLE PCT			
METHANE	50.3	75.1	89.6
ETHANE	14.7	10.1	5.8
PROPANE	14.6	5.0	1.7
N-BUTANE	7.2	1.4	0.6
ISOBUTANE	3.1	1.8	0.3
N-PENTANE	3.0	1.8	0.2
ISOPENTANE	2.8	0.0	0.0
CYCLOPENTANE	0.5	1.1	0.1
HEXANES PLUS	2.0	3.2	0.2
NITROGEN	1.6	0.3	0.9
OXYGEN	TRACE	0.0	TRACE
ARGON	0.0	0.0	TRACE
HYDROGEN	0.1	0.1	0.0
HYDROGEN SULFIDE**	0.0	0.0	TRACE
CARBON DIOXIDE	0.1	0.1	0.5
HELIUM	0.03	0.04	0.02
HEATING VALUE*	1869	1459	1109
SPECIFIC GRAVITY	1.107	0.835	0.634

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 70 SAMPLE 18443	INDEX 71 SAMPLE 18311	INDEX 72 SAMPLE 18312
STATE	NEW MEXICO	NEW MEXICO	NEW MEXICO
COUNTY	EDDY	HARDING	HARDING
FIELD	WILDCAT	NOT GIVEN	NOT GIVEN
WELL NAME	GULF "5" FEDERAL NO. 1	DE BACA WELL NO. 2YB	MITCHELL LEASE NO. 6M
LOCATION	SEC. 5, T22S, R29E	SEC. 31, T20N, R31E	SEC. 8, T19N, R30E
OWNER	ENRON OIL & GAS CO.	AMERIGAS, INC.	AMERIGAS, INC.
COMPLETED	--/--/86	02/24/87	02/24/87
SAMPLED	09/18/87	02/24/87	02/24/87
FORMATION	PENN-ATOKA	NOT GIVEN	NOT GIVEN
GEOLOGIC PROVINCE CODE	430	445	445
DEPTH, FEET	12425	NOT GIVEN	NOT GIVEN
WELLHEAD PRESSURE,PSIG	1750	250	512
OPEN FLOW, MCFD	1500	NOT GIVEN	NOT GIVEN
COMPONENT, MOLE PCT			
METHANE	96.4	0.0	0.0
ETHANE	1.6	0.0	0.0
PROPANE	TRACE	0.0	0.0
N-BUTANE	0.3	0.0	0.0
ISOBUTANE	0.0	0.0	0.0
N-PENTANE	TRACE	0.0	0.0
ISOPENTANE	0.4	0.0	0.0
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.0	0.0
NITROGEN	0.7	0.4	1.3
OXYGEN	0.0	TRACE	0.3
ARGON	0.0	0.0	TRACE
HYDROGEN	0.0	0.0	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.5	99.6	98.4
HELIUM	0.01	TRACE	TRACE
HEATING VALUE*	1033	0	0
SPECIFIC GRAVITY	0.582	1.527	1.520

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 73 SAMPLE 18313	INDEX 74 SAMPLE 18314	INDEX 75 SAMPLE 18473
STATE	NEW MEXICO	NEW MEXICO	NEW MEXICO
COUNTY	HARDING	HARDING	LEA
FIELD	NOT GIVEN	NOT GIVEN	BUFFALO VALLEY
WELL NAME	MITCHELL LEASE NO. 20K	LIBBY WELL NO. 4K	LANGLEY FEDERAL COM. NO. 3
LOCATION	SEC. 5, T18N, R30E	SEC. 16, T20N, R31E	SEC. 14, T15S, R27E
OWNER	AMERIGAS, INC.	AMERIGAS, INC.	READ & STEVENS, INC.
COMPLETED	02/24/87	--/--/87	09/05/85
SAMPLED	02/24/87	02/24/87	11/--/87
FORMATION	NOT GIVEN	NOT GIVEN	PENN-ATOKA
GEOLOGIC PROVINCE CODE	445	445	430
DEPTH, FEET	NOT GIVEN	NOT GIVEN	8522
WELLHEAD PRESSURE,PSIG	462	250	1335
OPEN FLOW, MCFD	NOT GIVEN	NOT GIVEN	850
COMPONENT, MOLE PCT			
METHANE	0.0	0.0	88.6
ETHANE	0.0	0.0	6.4
PROPANE	0.0	0.0	2.1
N-BUTANE	0.0	0.0	0.6
ISOBUTANE	0.0	0.2	0.1
N-PENTANE	0.0	0.0	0.2
ISOPENTANE	0.0	TRACE	0.2
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.1	0.1
NITROGEN	0.3	0.4	1.3
OXYGEN	0.1	0.1	0.1
ARGON	0.0	0.0	TRACE
HYDROGEN	0.0	0.0	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	99.6	99.1	0.3
HELIUM	0.01	TRACE	0.03
HEATING VALUE*	0	12	1113
SPECIFIC GRAVITY	1.527	1.527	0.637

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 76 SAMPLE 18375	INDEX 77 SAMPLE 18451	INDEX 78 SAMPLE 18462
STATE	NEW MEXICO	NEW MEXICO	NEW YORK
COUNTY	RIO ARRIBA	SAN JUAN	GENESEE
FIELD	WILDCAT	BLANCO	ATTICA-DANLEY CORNERS AREA
WELL NAME	JICARILLA 464 NO. 1	FIELDS NO. 16	ARNOLD NO. 2
LOCATION	SEC. 30, T30N, R3W	SEC. 25, T32N, R11W	BATAVIA TWP
OWNER	ROBERT L. BAYLESS	TENNECO OIL EXP. & PROD. CO.	GYPSUM ENERGY MANAGEMENT CO.
COMPLETED	12/01/86	07/30/87	09/20/84
SAMPLED	05/31/87	09/28/87	10/30/87
FORMATION	CRET-PICTURED CLIFFS	CRET-PICTURED CLIFFS	SILU-MEDINA
GEOLOGIC PROVINCE CODE	580	580	160
DEPTH, FEET	3740	3150	960
WELLHEAD PRESSURE,PSIG	1202	650	210
OPEN FLOW, MCFD	3923	1300	200
COMPONENT, MOLE PCT			
METHANE	86.7	75.5	83.1
ETHANE	7.6	5.0	9.8
PROPANE	3.2	1.8	2.3
N-BUTANE	0.4	0.6	0.6
ISOBUTANE	0.8	0.1	0.0
N-PENTANE	TRACE	0.4	0.4
ISOPENTANE	0.2	0.0	0.0
CYCLOPENTANE	0.0	TRACE	0.1
HEXANES PLUS	0.1	0.2	0.2
NITROGEN	0.6	14.7	3.1
OXYGEN	TRACE	TRACE	TRACE
ARGON	TRACE	TRACE	0.0
HYDROGEN	TRACE	0.0	0.1
HYDROGEN SULFIDE**	0.0	TRACE	0.0
CARBON DIOXIDE	0.2	1.6	0.2
HELIUM	TRACE	TRACE	0.19
HEATING VALUE*	1154	952	1125
SPECIFIC GRAVITY	0.654	0.696	0.661

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 79 SAMPLE 18465	INDEX 80 SAMPLE 18463	INDEX 81 SAMPLE 18464
STATE	NEW YORK	NEW YORK	NEW YORK
COUNTY	GENESEE	WYOMING	WYOMING
FIELD	ATTICA-DANLEY CORNERS AREA	ATTICA-DANLEY CORNERS AREA	ATTICA-DANLEY CORNERS AREA
WELL NAME	MEYER NO. 1	RUPERT NO. 1	KIRSCH NO. 1
LOCATION	TOWN OF ALEXANDER	BENNINGTON TWP	SHELDON TWP
OWNER	GYPSUM ENERGY MANAGEMENT CO.	GYPSUM ENERGY MANAGEMENT CO.	GYPSUM ENERGY MANAGEMENT CO.
COMPLETED	05/18/83	05/05/83	03/08/83
SAMPLED	10/29/87	10/30/87	10/30/87
FORMATION	SILU-MEDINA	SILU-MEDINA	SILU-MEDINA
GEOLOGIC PROVINCE CODE	160	160	160
DEPTH, FEET	1328	1732	2736
WELLHEAD PRESSURE,PSIG	180	200	160
OPEN FLOW, MCFD	28	45	2
COMPONENT, MOLE PCT			
METHANE	85.1	88.5	89.1
ETHANE	7.8	6.1	4.2
PROPANE	1.7	0.8	0.5
N-BUTANE	0.5	0.4	0.3
ISOBUTANE	0.0	0.0	0.0
N-PENTANE	0.4	0.3	0.3
ISOPENTANE	0.0	0.1	0.0
CYCLOPENTANE	0.1	0.1	0.1
HEXANES PLUS	0.2	0.0	0.2
NITROGEN	3.8	3.3	4.7
OXYGEN	TRACE	TRACE	TRACE
ARGON	TRACE	0.0	TRACE
HYDROGEN	0.1	0.1	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.2	0.1	0.2
HELIUM	0.19	0.14	0.19
HEATING VALUE*	1091	1062	1026
SPECIFIC GRAVITY	0.647	0.622	0.616

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 82 SAMPLE 18272	INDEX 83 SAMPLE 18285	INDEX 84 SAMPLE 18410
STATE	NORTH DAKOTA	NORTH DAKOTA	OKLAHOMA
COUNTY	MCKENZIE	WILLIAMS	ALFALFA
FIELD	POE	NOT GIVEN	SALT PLAINS NE
WELL NAME	L.M. STENEHJEM NO. 2	ZIMMERMAN NO. 10-1	STOABS "A" NO. 1-34
LOCATION	SEC. 10, T151N, R100W	SEC. 10, T152N, R104W	SEC. 34, T27N, R9W
OWNER	TEXACO INC.	COLUMBIA GAS DEVELOPMENT COR	ANADARKO PETROLEUM CORP.
COMPLETED	08/03/86	86/11/14	04/05/87
SAMPLED	11/20/86	01/07/87	07/24/87
FORMATION	ORDO-RED RIVER	ORDO-RED RIVER	DEVO-MISENER
GEOLOGIC PROVINCE CODE	395	395	360
DEPTH, FEET	14226	12906	5945
WELLHEAD PRESSURE,PSIG	2500	2564	2100
OPEN FLOW, MCFD	600	417	1146
COMPONENT, MOLE PCT			
METHANE	81.6	60.0	77.9
ETHANE	9.7	19.1	6.8
PROPANE	3.6	11.9	3.7
N-BUTANE	0.9	3.5	1.2
ISOBUTANE	0.2	2.7	0.2
N-PENTANE	0.2	0.0	0.3
ISOPENTANE	0.3	0.9	0.4
CYCLOPENTANE	0.0	TRACE	0.0
HEXANES PLUS	0.2	0.0	0.2
NITROGEN	0.6	1.0	7.9
OXYGEN	0.2	TRACE	0.8
ARGON	TRACE	0.0	0.1
HYDROGEN	1.0	0.1	0.2
HYDROGEN SULFIDE**	0.5	0.0	0.0
CARBON DIOXIDE	0.8	0.6	0.2
HELIUM	0.03	0.04	0.15
HEATING VALUE*	1169	1507	1094
SPECIFIC GRAVITY	0.678	0.888	0.702

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 85 SAMPLE 18357	INDEX 86 SAMPLE 18471	INDEX 87 SAMPLE 18291
STATE	OKLAHOMA	OKLAHOMA	OKLAHOMA
COUNTY	BEAVER	BEAVER	BEAVER
FIELD	DOMBEY	GREENOUGH	GREENOUGH NW
WELL NAME	PITTMAN NO. 2-20	AMEN NO. 3-31	WALLACE "B" NO. 1
LOCATION	SEC. 20, T3N, R22ECM	SEC. 31, T6N, R21ECM	SEC. 22, T6N, R21ECM
OWNER	LADD PETROLEUM CORP.	LADD PETROLEUM CORP.	J. M. HUBER CORP.
COMPLETED	08/22/86	02/03/87	05/21/86
SAMPLED	04/27/87	11/05/87	01/--/87
FORMATION	PENN-CHESTER BASAL	MISS-CHESTER	PENN-OSWEGO L
GEOLOGIC PROVINCE CODE	360	360	360
DEPTH, FEET	7587	6521	5590
WELLHEAD PRESSURE,PSIG	2160	400	20
OPEN FLOW, MCFD	1764	1251	31
COMPONENT, MOLE PCT			
METHANE	87.3	86.3	74.5
ETHANE	3.8	4.8	7.1
PROPANE	1.6	3.4	3.6
N-BUTANE	1.2	0.0	1.1
ISOBUTANE	0.0	1.9	0.5
N-PENTANE	0.0	0.0	0.6
ISOPENTANE	0.5	0.0	TRACE
CYCLOPENTANE	TRACE	0.0	0.2
HEXANES PLUS	0.1	0.0	0.5
NITROGEN	3.8	3.3	11.5
OXYGEN	0.0	0.0	TRACE
ARGON	TRACE	TRACE	TRACE
HYDROGEN	0.1	0.1	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	1.6	0.1	0.1
HELIUM	0.13	0.16	0.29
HEATING VALUE*	1060	1112	1088
SPECIFIC GRAVITY	0.649	0.655	0.725

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 88 SAMPLE 18436	INDEX 89 SAMPLE 18366	INDEX 90 SAMPLE 18326
STATE	OKLAHOMA	OKLAHOMA	OKLAHOMA
COUNTY	BEAVER	BECKHAM	BLAINE
FIELD	UNION STAR	NOT GIVEN	ELM GROVE
WELL NAME	VENABLE UNIT NO. 34-1	DAMRON NO. 1-2	MORDECAI NO. 2-36
LOCATION	SEC. 34, T3N, R23ECM	SEC. 2, T9N, R23W	SEC. 36, T13N, R12W
OWNER	ARCO OIL & GAS CO.	WAGNER & BROWN OIL & GAS PRO	ANR PRODUCTION CO.
COMPLETED	04/02/87	06/11/85	01/05/87
SAMPLED	09/14/87	05/18/87	03/05/87
FORMATION	MISS-ST. LOUIS	PENN-SPRINGER	PENN-RED FORK
GEOLOGIC PROVINCE CODE	360	360	360
DEPTH, FEET	8050	14137	11488
WELLHEAD PRESSURE,PSIG	1128	1210	4650
OPEN FLOW, MCFD	552	560	5800
COMPONENT, MOLE PCT			
METHANE	94.7	90.4	83.1
ETHANE	1.8	5.1	9.0
PROPANE	0.4	1.9	3.3
N-BUTANE	0.4	0.2	0.6
ISOBUTANE	0.0	0.6	0.5
N-PENTANE	0.3	0.0	0.1
ISOPENTANE	TRACE	0.2	0.2
CYCLOPENTANE	0.1	0.0	TRACE
HEXANES PLUS	0.2	0.1	0.1
NITROGEN	1.7	0.5	0.7
OXYGEN	0.0	TRACE	TRACE
ARGON	TRACE	0.0	TRACE
HYDROGEN	0.0	0.1	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.2	0.8	2.3
HELIUM	0.14	0.02	0.03
HEATING VALUE*	1041	1098	1144
SPECIFIC GRAVITY	0.594	0.627	0.682

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 91 SAMPLE 18389	INDEX 92 SAMPLE 18304	INDEX 93 SAMPLE 18467
STATE	OKLAHOMA	OKLAHOMA	OKLAHOMA
COUNTY	BLAINE	CADDO	CADDO
FIELD	HYDRO NE	BRIDGEPORT W	BROXTON N
WELL NAME	H. C. GROENDYKE NO. 1-11	FOSTER FARMS NO. 1-1	SADLER NO. 1
LOCATION	SEC. 11, T13N, R13W	SEC. 1, T12N, R13W	SEC. 3, T6N, R12W
OWNER	NOVA ENERGY CORP.	AN-SON CORP.	SANGUINE, LTD.
COMPLETED	10/24/85	02/22/86	10/05/85
SAMPLED	06/29/87	02/23/87	10/29/87
FORMATION	PENN-MORROW	PENN-CUNNINGHAM	PENN-BRITT
GEOLOGIC PROVINCE CODE	360	360	360
DEPTH, FEET	11844	12886	20896
WELLHEAD PRESSURE,PSIG	5900	6650	13500
OPEN FLOW, MCFD	1600	2128	2668
COMPONENT, MOLE PCT			
METHANE	88.4	93.0	97.5
ETHANE	3.7	3.4	0.6
PROPANE	1.3	1.0	0.1
N-BUTANE	0.0	0.1	0.0
ISOBUTANE	0.3	0.4	TRACE
N-PENTANE	0.0	0.0	0.0
ISOPENTANE	0.0	0.0	TRACE
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.1	0.0
NITROGEN	4.3	0.4	0.4
OXYGEN	1.1	TRACE	0.0
ARGON	TRACE	0.0	TRACE
HYDROGEN	TRACE	0.1	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.8	1.5	1.4
HELIUM	0.03	0.02	0.02
HEATING VALUE*	1006	1051	1002
SPECIFIC GRAVITY	0.622	0.607	0.574

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 94 SAMPLE 18341	INDEX 95 SAMPLE 18387	INDEX 96 SAMPLE 18468
STATE	OKLAHOMA	OKLAHOMA	OKLAHOMA
COUNTY	CADDO	CADDO	CADDO
FIELD	CROW PROSPECT	FORT COBB NW	ONEY
WELL NAME	KRUPKA NO. 1-33	STOCKTON NO. 1-21	COWAN NO. 1
LOCATION	SEC. 33, T8N, R9W	SEC. 21, T8N, R12W	SEC. 18, T9N, R11W
OWNER	SOHIO PETROLEUM CO.	SOHIO PETROLEUM CO.	SANGUINE, LTD.
COMPLETED	07/09/85	10/--/86	04/29/85
SAMPLED	03/23/87	06/24/87	10/28/87
FORMATION	PENN-SPRINGER	PENN-SPRINGER	PENN-BRITT
GEOLOGIC PROVINCE CODE	360	360	360
DEPTH, FEET	16349	18500	16097
WELLHEAD PRESSURE,PSIG	7500	4000	10800
OPEN FLOW, MCFD	962	2500	8100
COMPONENT, MOLE PCT			
METHANE	96.0	95.7	96.2
ETHANE	1.4	0.5	1.4
PROPANE	0.2	0.1	TRACE
N-BUTANE	0.0	0.0	0.3
ISOBUTANE	0.1	TRACE	0.0
N-PENTANE	0.0	0.0	0.0
ISOPENTANE	0.0	0.0	0.3
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.0	0.0
NITROGEN	0.9	1.3	0.3
OXYGEN	0.1	0.3	0.0
ARGON	TRACE	0.0	TRACE
HYDROGEN	0.1	TRACE	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	1.2	2.0	1.6
HELIUM	0.00	0.02	0.02
HEATING VALUE*	1006	981	1020
SPECIFIC GRAVITY	0.580	0.584	0.587

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H_2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 97 SAMPLE 18466	INDEX 98 SAMPLE 18437	INDEX 99 SAMPLE 18411
STATE	OKLAHOMA	OKLAHOMA	OKLAHOMA
COUNTY	CADDO	CANADIAN	CUSTER
FIELD	ONEY E	CONCHO N	ALEDO SW
WELL NAME	MARIE NO. 1	SCHROEDER NO. 1-12	THIESSEN NO. 1-12
LOCATION	SEC. 9, T9N, R11W	SEC. 21, T14N, R8W	SEC. 12, T15N, R18W
OWNER	SANGUINE, LTD.	CONFED OIL CO.	WARD PETROLEUM CORP.
COMPLETED	05/20/86	07/11/87	08/20/86
SAMPLED	10/28/87	09/15/87	07/28/87
FORMATION	PENN-BRITT	ORDO-VIOLA	PENN-ATOKA
GEOLOGIC PROVINCE CODE	360	360	360
DEPTH, FEET	15697	10750	10854
WELLHEAD PRESSURE,PSIG	10000	1500	1150
OPEN FLOW, MCFD	12138	47	4518
COMPONENT, MOLE PCT			
METHANE	95.4	89.2	80.5
ETHANE	1.4	5.8	10.5
PROPANE	0.2	1.8	4.7
N-BUTANE	0.0	0.7	1.1
ISOBUTANE	TRACE	0.0	0.7
N-PENTANE	0.0	0.2	0.3
ISOPENTANE	0.1	0.2	0.3
CYCLOPENTANE	0.0	0.1	0.1
HEXANES PLUS	0.0	0.2	0.2
NITROGEN	1.2	1.1	0.7
OXYGEN	0.1	0.1	TRACE
ARGON	TRACE	0.0	TRACE
HYDROGEN	0.0	0.0	0.3
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	1.6	0.6	0.7
HELIUM	0.02	0.04	0.03
HEATING VALUE*	1001	1107	1221
SPECIFIC GRAVITY	0.586	0.636	0.704

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 100 SAMPLE 18475	INDEX 101 SAMPLE 18356	INDEX 102 SAMPLE 18377
STATE	OKLAHOMA	OKLAHOMA	OKLAHOMA
COUNTY	CUSTER	CUSTER	DEWEY
FIELD	ANTHON NE	WEATHERFORD	HUCMAC
WELL NAME	COIT NO. 2	CORNELL NO. 2-24	VAN METER NO. 1-8
LOCATION	SEC. 17, T15N, R17W	SEC. 24, T13N, R25W	SEC. 8, T18N, R14W
OWNER	SAMSON RESOURCES CO.	ARKLA EXPLORATION CO.	HAWKINS OIL & GAS, INC.
COMPLETED	12/31/85	02/16/87	01/06/87
SAMPLED	11/11/87	04/27/87	06/--/87
FORMATION	PENN-MORROW	PENN-SKINNER	PENN-MORROW
GEOLOGIC PROVINCE CODE	360	360	360
DEPTH, FEET	12259	11328	9066
WELLHEAD PRESSURE,PSIG	1500	3609	2838
OPEN FLOW, MCFD	1200	2214	2078
COMPONENT, MOLE PCT			
METHANE	97.3	73.7	80.7
ETHANE	0.8	6.9	8.5
PROPANE	0.1	2.0	4.7
N-BUTANE	0.0	2.6	0.7
ISOBUTANE	0.1	0.0	1.1
N-PENTANE	0.0	0.0	0.5
ISOPENTANE	TRACE	9.3	0.4
CYCLOPENTANE	0.0	0.1	0.4
HEXANES PLUS	0.0	0.0	1.1
NITROGEN	0.3	1.7	1.4
OXYGEN	0.1	0.1	0.1
ARGON	TRACE	0.1	0.0
HYDROGEN	0.0	0.1	TRACE
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	1.4	3.5	0.3
HELIUM	0.02	0.04	0.05
HEATING VALUE*	1005	1410	1262
SPECIFIC GRAVITY	0.576	0.871	0.731

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 103 SAMPLE 18359	INDEX 104 SAMPLE 18479	INDEX 105 SAMPLE 18476
STATE	OKLAHOMA	OKLAHOMA	OKLAHOMA
COUNTY	DEWEY	GARFIELD	GRADY
FIELD	SQUIRREL CREEK S	SOONER TREND	CHICKASHA
WELL NAME	TRUST NO. 1-17	T. W. HODGEN NO. 2	COWBOY "B" NO. 1
LOCATION	SEC. 17, T16N, R15W	SEC. 33, T22N, R8W	SEC. 35, T7N, R7W
OWNER	MARSHALL OIL CORP.	SUN EXPLORATION & PRODUCTION	APACHE CORP.
COMPLETED	11/--/86	07/20/87	08/13/84
SAMPLED	04/27/87	11/09/87	11/12/87
FORMATION	PENN-MORROW	PENN-CHEROKEE	PENN-HOXBAR
GEOLOGIC PROVINCE CODE	360	360	360
DEPTH, FEET	10670	6392	8110
WELLHEAD PRESSURE,PSIG	3450	1440	1320
OPEN FLOW, MCFD	1500	520	1450
COMPONENT, MOLE PCT			
METHANE	93.8	91.6	91.3
ETHANE	3.2	3.9	3.1
PROPANE	0.9	1.1	1.3
N-BUTANE	0.4	0.2	0.4
ISOBUTANE	TRACE	0.1	0.0
N-PENTANE	0.0	0.0	0.2
ISOPENTANE	0.3	0.2	0.1
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.0	0.1
NITROGEN	0.4	2.2	3.2
OXYGEN	0.0	0.1	TRACE
ARGON	0.0	TRACE	TRACE
HYDROGEN	0.1	0.0	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.9	0.4	0.2
HELIUM	0.03	0.12	0.10
HEATING VALUE*	1057	1047	1045
SPECIFIC GRAVITY	0.601	0.607	0.612

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 106 SAMPLE 18315	INDEX 107 SAMPLE 18330	INDEX 108 SAMPLE 18484
STATE	OKLAHOMA	OKLAHOMA	OKLAHOMA
COUNTY	GRADY	GRADY	HARPER
FIELD	GOLDEN TREND	NOT GIVEN	LOVEDALE
WELL NAME	BROWN NO. 1-27	MEDELL NO. 1-35	SELMAN NO. A1-32
LOCATION	SEC. 27, T5N, R5W	SEC. 35, T3N, R7W	SEC. 32, T27N, R20W
OWNER	PETROCORP, INC.	SOHIO PETROLEUM CO.	K. STEWART PETROLEUM CORP.
COMPLETED	01/16/86	06/20/85	03/02/87
SAMPLED	02/25/87	09/12/86	11/19/87
FORMATION	PENN-CUNNINGHAM & BOATWRIGHT	PENN-SPRINGER	PENN-MORROW
GEOLOGIC PROVINCE CODE	360	360	355
DEPTH, FEET	9925	18842	5882
WELLHEAD PRESSURE,PSIG	3161	5684	2100
OPEN FLOW, MCFD	2547	2455	1800
COMPONENT, MOLE PCT			
METHANE	86.5	96.5	94.2
ETHANE	7.2	1.1	3.2
PROPANE	3.0	0.2	0.9
N-BUTANE	0.7	0.0	0.2
ISOBUTANE	0.5	0.1	0.1
N-PENTANE	0.1	0.0	0.0
ISOPENTANE	0.2	0.0	0.3
CYCLOPENTANE	TRACE	0.0	0.0
HEXANES PLUS	0.2	0.0	0.0
NITROGEN	1.1	0.7	0.6
OXYGEN	0.0	0.0	TRACE
ARGON	0.0	TRACE	TRACE
HYDROGEN	0.1	TRACE	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.3	1.2	0.4
HELIUM	0.05	0.03	0.06
HEATING VALUE*	1147	1006	1057
SPECIFIC GRAVITY	0.655	0.577	0.596

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 109 SAMPLE 18278	INDEX 110 SAMPLE 18321	INDEX 111 SAMPLE 18431
STATE	OKLAHOMA	OKLAHOMA	OKLAHOMA
COUNTY	HASKELL	KINGFISHER	LE FLORE
FIELD	WHITEFIELD S	SOONER TREND	SPIRO
WELL NAME	MOORE-TUCKER NO. 1-29	NORRIS "A" NO. 1	FOXWOOD NO. 2
LOCATION	SEC. 32, T9N, R20E	SEC. 8, T19N, R8W	SEC. 6, T9N, R25E
OWNER	ROYE REALTY & DEVELOPING, IN	CITIES SERVICE OIL & GAS COR	SAMSON RESOURCES CO.
COMPLETED	06/25/85	10/10/86	01/14/87
SAMPLED	12/03/86	03/02/87	09/08/87
FORMATION	DEVO-HUNTON	ORDO-SIMPSON	PENN-GILCREASE
GEOLOGIC PROVINCE CODE	345	360	345
DEPTH, FEET	4970	8490	5067
WELLHEAD PRESSURE,PSIG	1500	2785	396
OPEN FLOW, MCFD	3941	3731	11324
COMPONENT, MOLE PCT			
METHANE	94.0	81.6	96.2
ETHANE	0.9	7.9	1.1
PROPANE	0.1	3.8	0.1
N-BUTANE	0.0	1.2	0.0
ISOBUTANE	TRACE	0.7	0.1
N-PENTANE	0.0	0.5	0.0
ISOPENTANE	TRACE	0.2	0.0
CYCLOPENTANE	0.0	0.1	0.0
HEXANES PLUS	0.0	0.3	0.0
NITROGEN	3.2	3.1	0.7
OXYGEN	0.1	0.0	TRACE
ARGON	TRACE	0.0	0.0
HYDROGEN	0.1	0.1	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	1.5	0.5	1.7
HELIUM	0.08	0.06	0.08
HEATING VALUE*	971	1180	1000
SPECIFIC GRAVITY	0.587	0.700	0.581

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 112 SAMPLE 18353	INDEX 113 SAMPLE 18491	INDEX 114 SAMPLE 18279
STATE	OKLAHOMA	OKLAHOMA	OKLAHOMA
COUNTY	OKMULGEE	PITTSBURG	POTTAWATOMIE
FIELD	NUYAKA	BREWER S	TECUMSEH NW
WELL NAME	LOWE NO. 3-32	PEARL "A" NO. 1	ROBERTSON "B" NO. 1
LOCATION	SEC. 32, T13N, R11E	SEC. 32, T4N, R14E	SEC. 6, T9N, R3E
OWNER	GMG OIL & GAS CORP.	TXO PRODUCTION CORP.	ESTORIL PRODUCING CORP.
COMPLETED	03/20/87	11/--/84	01/03/86
SAMPLED	04/23/87	11/30/87	12/04/86
FORMATION	PENN-DUTCHER	PENN-WAPANUCKA	PENN-RED FORK
GEOLOGIC PROVINCE CODE	355	345	355
DEPTH, FEET	2492	9725	4950
WELLHEAD PRESSURE,PSIG	400	2220	564
OPEN FLOW, MCFD	250	2000	1137
COMPONENT, MOLE PCT			
METHANE	72.8	95.3	72.0
ETHANE	11.0	0.4	9.4
PROPANE	6.6	TRACE	4.7
N-BUTANE	1.4	0.0	1.1
ISOBUTANE	1.2	0.0	0.6
N-PENTANE	0.0	0.0	0.4
ISOPENTANE	0.5	0.1	0.0
CYCLOPENTANE	0.1	0.0	0.1
HEXANES PLUS	0.0	0.0	0.2
NITROGEN	5.9	1.1	10.9
OXYGEN	0.1	0.1	0.3
ARGON	TRACE	TRACE	TRACE
HYDROGEN	0.1	0.0	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.2	2.9	0.1
HELIUM	0.10	0.06	0.08
HEATING VALUE*	1219	978	1108
SPECIFIC GRAVITY	0.752	0.592	0.735

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 115 SAMPLE 18323	INDEX 116 SAMPLE 18490	INDEX 117 SAMPLE 18342
STATE	OKLAHOMA	OKLAHOMA	OKLAHOMA
COUNTY	ROGER MILLS	ROGER MILLS	ROGER MILLS
FIELD	BERLIN	BERLIN NE	CHEYENNE SW
WELL NAME	MACKEY NO. 1-3	TAYLOR ESTATE NO. 1-27	SPROWLS NO. 3-28
LOCATION	SEC. 3, T11N, R24W	SEC. 27, T12N, R23W	SEC. 28, T13N, R23W
OWNER	SOHIO PETROLEUM CO.	APACHE CORP.	AN-SON CORP.
COMPLETED	12/03/86	04/15/87	04/10/86
SAMPLED	03/05/87	12/01/87	03/25/87
FORMATION	PENN-MORROW U	PENN-MORROW	PENN-RED FORK
GEOLOGIC PROVINCE CODE	360	360	360
DEPTH, FEET	18203	17288	13692
WELLHEAD PRESSURE,PSIG	9742	12224	5925
OPEN FLOW, MCFD	1660	22451	20459
COMPONENT, MOLE PCT			
METHANE	97.0	96.9	94.4
ETHANE	0.3	0.3	2.7
PROPANE	TRACE	TRACE	0.5
N-BUTANE	0.0	0.0	0.0
ISOBUTANE	0.0	TRACE	0.2
N-PENTANE	0.0	0.0	0.0
ISOPENTANE	0.0	0.1	0.0
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.0	0.0
NITROGEN	0.3	0.3	0.5
OXYGEN	TRACE	0.0	0.1
ARGON	0.0	TRACE	TRACE
HYDROGEN	0.1	0.0	0.1
HYDROGEN SULFIDE**	0.0	TRACE	0.0
CARBON DIOXIDE	2.2	2.3	1.5
HELIUM	0.02	0.01	0.00
HEATING VALUE*	988	995	1025
SPECIFIC GRAVITY	0.578	0.582	0.593

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 118 SAMPLE 18394	INDEX 119 SAMPLE 18497	INDEX 120 SAMPLE 18489
STATE	OKLAHOMA	OKLAHOMA	OKLAHOMA
COUNTY	ROGER MILLS	ROGER MILLS	ROGER MILLS
FIELD	HAMMON NW	MULE TRAIN	SWEETWATER NE
WELL NAME	LAURENCE NO. 1	COBB NO. 2-22	W. W. BROWN NO. 1-26
LOCATION	SEC. 5, T13N, R21W	SEC. 22, T15N, R23W	SEC. 26, T12N, R25W
OWNER	APACHE CORP.	APACHE CORP.	SANGUINE, LTD.
COMPLETED	09/04/83	08/01/87	02/26/86
SAMPLED	07/02/87	12/10/87	11/24/87
FORMATION	PENN-DES MOINES	PENN-SKINNER	PENN-PURYEAR
GEOLOGIC PROVINCE CODE	360	360	360
DEPTH, FEET	12610	11263	17832
WELLHEAD PRESSURE,PSIG	4120	4105	8000
OPEN FLOW, MCFD	1900	5116	30000
COMPONENT, MOLE PCT			
METHANE	90.5	84.8	97.0
ETHANE	5.6	8.8	0.5
PROPANE	1.6	3.4	TRACE
N-BUTANE	TRACE	0.5	0.0
ISOBUTANE	0.5	0.7	0.0
N-PENTANE	0.0	0.0	0.0
ISOPENTANE	0.0	0.1	0.0
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.0	0.0
NITROGEN	0.5	0.6	0.2
OXYGEN	0.0	0.1	TRACE
ARGON	0.0	TRACE	TRACE
HYDROGEN	0.1	0.0	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	1.1	0.9	2.2
HELIUM	0.02	0.03	0.01
HEATING VALUE*	1077	1152	992
SPECIFIC GRAVITY	0.619	0.665	0.580

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 121 SAMPLE 18423	INDEX 122 SAMPLE 18316	INDEX 123 SAMPLE 18347
STATE	OKLAHOMA	OKLAHOMA	OKLAHOMA
COUNTY	STEPHENS	TEXAS	TEXAS
FIELD	MARLOW W	CAMRICK GAS AREA	GUYMON S
WELL NAME	LOUGHRIDGE NO. 1	WESTMORELAND "C" NO. 2-26	PEARL NO. 4
LOCATION	SEC. 19, T2N, R8W	SEC. 26, T1N, R18ECM	SEC. 16, T1N, R15ECM
OWNER	KAISER-FRANCIS OIL CO.	PLAINS PETROLEUM OPERATING C	PHILLIPS PETROLEUM CO.
COMPLETED	04/28/87	11/20/86	03/25/85
SAMPLED	08/12/87	02/27/87	04/--/87
FORMATION	-CHEEK	PENN-MORROW	PENN-CHEROKEE
GEOLOGIC PROVINCE CODE	350	360	360
DEPTH, FEET	4450	7002	5956
WELLHEAD PRESSURE,PSIG	1125	1353	NOT GIVEN
OPEN FLOW, MCFD	660	4814	1981
COMPONENT, MOLE PCT			
METHANE	87.9	95.7	80.7
ETHANE	4.7	1.8	9.2
PROPANE	2.2	0.6	4.6
N-BUTANE	0.7	TRACE	1.1
ISOBUTANE	0.3	0.2	0.4
N-PENTANE	0.4	0.0	0.2
ISOPENTANE	0.0	0.1	0.3
CYCLOPENTANE	0.1	0.0	0.1
HEXANES PLUS	0.2	0.0	0.1
NITROGEN	3.2	1.4	2.9
OXYGEN	0.0	0.0	TRACE
ARGON	0.0	TRACE	0.0
HYDROGEN	0.3	TRACE	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.1	0.3	0.2
HELIUM	0.04	0.05	0.08
HEATING VALUE*	1094	1028	1183
SPECIFIC GRAVITY	0.640	0.584	0.696

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 124 SAMPLE 18297	INDEX 125 SAMPLE 18270	INDEX 126 SAMPLE 18393
STATE	OKLAHOMA	OKLAHOMA	OKLAHOMA
COUNTY	TEXAS	TEXAS	WASHITA
FIELD	HOOKER E	HOUGH S	BRAITHWAIT
WELL NAME	STRICKLIN NO. 3	BONNER "B" NO. 1	CHARTER NO. 2-10
LOCATION	SEC. 35, T5N, R18ECM	SEC. 9, T4N, R14ECM	SEC. 10, T11N, R18W
OWNER	APACHE CORP.	ANADARKO PETROLEUM CORP.	MERIDIAN OIL, INC.
COMPLETED	06/23/84	03/19/86	03/28/86
SAMPLED	02/17/87	11/--/86	07/02/87
FORMATION	MISS-CHESTER	PENN-MORROW C	PENN-DES MOINES&GRANITE WASH
GEOLOGIC PROVINCE CODE	360	360	360
DEPTH, FEET	6546	6148	12550
WELLHEAD PRESSURE,PSIG	850	NOT GIVEN	2316
OPEN FLOW, MCFD	4345	3500	1768
COMPONENT, MOLE PCT			
METHANE	85.2	80.7	83.6
ETHANE	5.3	4.5	9.0
PROPANE	3.7	3.1	4.3
N-BUTANE	1.1	0.5	0.8
ISOBUTANE	0.7	0.5	0.7
N-PENTANE	0.3	0.2	TRACE
ISOPENTANE	0.3	0.0	0.2
CYCLOPENTANE	0.1	0.0	0.0
HEXANES PLUS	0.4	0.2	0.0
NITROGEN	2.3	9.8	0.8
OXYGEN	0.1	0.0	0.0
ARGON	TRACE	0.0	0.0
HYDROGEN	0.1	0.1	TRACE
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.2	0.3	0.5
HELIUM	0.14	0.25	0.03
HEATING VALUE*	1165	1031	1180
SPECIFIC GRAVITY	0.679	0.674	0.677

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 127 SAMPLE 18398	INDEX 128 SAMPLE 18280	INDEX 129 SAMPLE 18383
STATE	OKLAHOMA	OKLAHOMA	PENNSYLVANIA
COUNTY	WASHITA	WOODS	WESTMORELAND
FIELD	CORDELL W	FALKNER SE	FORBES STATE FOREST
WELL NAME	BAIRD ESTATE NO. 1-11	SCHULTZ NO. 2-22	COMMMONWEALTH OF PENN. 353-2
LOCATION	SEC. 11, T9N, R18W	SEC. 22, T28N, R16W	SEC. H, LIGIONIER TWP.
OWNER	POGO PRODUCING CO.	PIONEER PRODUCTION CORP.	CNG DEVELOPMENT CO.
COMPLETED	07/31/86	05/30/85	02/04/87
SAMPLED	07/08/87	11/13/86	06/16/87
FORMATION	PENN-GRANITE WASH	PERM-DEWEY	DEVO-HUNTERSVILLE
GEOLOGIC PROVINCE CODE	360	360	160
DEPTH, FEET	9160	5136	8093
WELLHEAD PRESSURE,PSIG	2508	NOT GIVEN	2900
OPEN FLOW, MCFD	1250	1600	15000
COMPONENT, MOLE PCT			
METHANE	89.7	84.2	96.5
ETHANE	5.0	5.0	1.2
PROPANE	2.4	3.7	0.1
N-BUTANE	0.5	1.3	0.0
ISOBUTANE	0.6	0.6	0.0
N-PENTANE	TRACE	0.5	0.0
ISOPENTANE	0.2	0.1	0.0
CYCLOPENTANE	0.0	0.2	0.0
HEXANES PLUS	0.1	0.4	0.0
NITROGEN	1.1	3.7	1.7
OXYGEN	0.0	0.1	0.3
ARGON	0.0	0.0	0.0
HYDROGEN	0.1	0.2	TRACE
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.1	TRACE	0.3
HELIUM	0.04	0.13	0.03
HEATING VALUE*	1115	1157	1001
SPECIFIC GRAVITY	0.633	0.685	0.572

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 130 SAMPLE 18298	INDEX 131 SAMPLE 18492	INDEX 132 SAMPLE 18282
STATE	TENNESSEE	TEXAS	TEXAS
COUNTY	PICKETT	BRAZORIA	CAMERON
FIELD	NOT GIVEN	DANBURY	WILDCAT
WELL NAME	RAY HUDDLESTON NO. 1	KILROY-VRAZEL NO. 1	STATE TRACT 667 NO. 1
LOCATION	SEC. 2, A-53	MATTIE SHAPARD SUR., A-668	PORT ISABEL SUR., A-265
OWNER	OHIO KENTUCKY OIL CORP.	KILROY CO. OF TEXAS	ADOBE OIL & GAS CORP.
COMPLETED	04/26/86	07/--/87	--/--/86
SAMPLED	01/12/87	12/05/87	12/17/86
FORMATION	ORDO-LEXINGTON & CURDSVILLE	OLIG-NODOSARIA BLANPIEDI	PLIO-NOT GIVEN
GEOLOGIC PROVINCE CODE	300	220	220
DEPTH, FEET	626	8983	5968
WELLHEAD PRESSURE,PSIG	40	3500	2485
OPEN FLOW, MCFD	1100	3450	1969
COMPONENT, MOLE PCT			
METHANE	79.7	89.6	98.6
ETHANE	10.9	5.5	0.2
PROPANE	3.8	1.9	0.2
N-BUTANE	0.7	0.4	0.0
ISOBUTANE	0.4	0.4	0.1
N-PENTANE	0.1	0.2	0.0
ISOPENTANE	0.1	TRACE	TRACE
CYCLOPENTANE	TRACE	0.0	0.0
HEXANES PLUS	0.1	0.2	0.0
NITROGEN	3.7	0.8	0.6
OXYGEN	TRACE	0.1	TRACE
ARGON	TRACE	TRACE	0.0
HYDROGEN	0.2	0.0	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	TRACE	1.0	TRACE
HELIUM	0.16	TRACE	TRACE
HEATING VALUE*	1153	1099	1011
SPECIFIC GRAVITY	0.682	0.634	0.560

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 133 SAMPLE 18273	INDEX 134 SAMPLE 18455	INDEX 135 SAMPLE 18391
STATE	TEXAS	TEXAS	TEXAS
COUNTY	CROCKETT	DE WITT	DE WITT
FIELD	UNIVERSITY 31	BADE	GUNPOINT N
WELL NAME	UNIVERSITY "32-17" NO. 1	BADE NO. 1	L. E. SCHRADE NO. 1
LOCATION	SEC. 17, BLK. 32, UNIV. LAND	JAMES JONES SUR., A-279	JAMES JONES SUR., A-279
OWNER	THOMPSON, J. CLEO	HANSON MINERALS CO.	APACHE CORP.
COMPLETED	07/25/86	--/--/87	12/--/85
SAMPLED	11/25/86	05/12/87	07/--/87
FORMATION	PENN-STRAWN, DETRITAL	OLIG-GREY SAND	EOCE-WILCOX L
GEOLOGIC PROVINCE CODE	430	220	220
DEPTH, FEET	9240	13483	12937
WELLHEAD PRESSURE,PSIG	2755	5800	5450
OPEN FLOW, MCFD	9600	17000	6992
COMPONENT, MOLE PCT			
METHANE	92.5	88.4	86.6
ETHANE	4.3	4.0	5.2
PROPANE	0.9	1.1	1.3
N-BUTANE	TRACE	0.0	0.0
ISOBUTANE	0.3	0.8	0.6
N-PENTANE	0.0	0.0	0.0
ISOPENTANE	TRACE	0.0	TRACE
CYCLOPENTANE	0.0	0.0	0.0
HEXANES PLUS	0.0	0.0	0.0
NITROGEN	1.1	0.1	0.3
OXYGEN	0.0	TRACE	TRACE
ARGON	0.0	TRACE	0.0
HYDROGEN	0.1	0.0	TRACE
HYDROGEN SULFIDE**	0.0	TRACE	0.0
CARBON DIOXIDE	0.7	5.5	6.0
HELIUM	0.04	TRACE	TRACE
HEATING VALUE*	1048	1024	1024
SPECIFIC GRAVITY	0.600	0.652	0.662

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 136 SAMPLE 18392	INDEX 137 SAMPLE 18459	INDEX 138 SAMPLE 18439
STATE	TEXAS	TEXAS	TEXAS
COUNTY	DE WITT	FORT BEND	HANSFORD
FIELD	GUNPOINT S	MOORE'S ORCHARD	HANNAS DRAW
WELL NAME	LOVEL A. BLAIN NO. 3	FREUDENSPRUNG NO. 2	ALLAR NO. 1
LOCATION	MUMFORD HOUSE SUR., A-226	GAIL BORDEN SUR., A-12	SEC. 213, BLK. 2, GH&H SUR.
OWNER	APACHE CORP.	PARTNERS OIL CO.	CAMBRIDGE & NAIL PET. EXPL.
COMPLETED	08/--/86	06/03/86	02/13/87
SAMPLED	07/--/87	10/26/87	09/16/87
FORMATION	EOCE-WILCOX M	EOCE-WILCOX	PERM-WOLFCAMP
GEOLOGIC PROVINCE CODE	220	220	360
DEPTH, FEET	11036	12257	3030
WELLHEAD PRESSURE,PSIG	5900	8333	342
OPEN FLOW, MCFD	4273	3750	2600
COMPONENT, MOLE PCT			
METHANE	81.3	84.5	76.6
ETHANE	8.7	4.9	7.1
PROPANE	3.9	1.9	3.5
N-BUTANE	0.6	0.7	1.2
ISOBUTANE	1.0	0.1	0.0
N-PENTANE	0.0	0.4	0.4
ISOPENTANE	0.2	0.3	0.1
CYCLOPENTANE	0.0	0.3	0.1
HEXANES PLUS	0.0	0.5	0.2
NITROGEN	0.4	3.4	9.9
OXYGEN	0.0	0.9	0.1
ARGON	0.0	TRACE	TRACE
HYDROGEN	TRACE	TRACE	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	3.9	2.1	0.2
HELIUM	TRACE	TRACE	0.56
HEATING VALUE*	1141	1082	1070
SPECIFIC GRAVITY	0.704	0.679	0.700

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 139 SAMPLE 18478	INDEX 140 SAMPLE 18310	INDEX 141 SAMPLE 18399
STATE	TEXAS	TEXAS	TEXAS
COUNTY	HEMPHILL	HEMPHILL	HEMPHILL
FIELD	HILDERBRAND	HOWE RANCH	VIKING
WELL NAME	COLEMAN-GRAHAM NO. 6	GENE HOWE NO. 7	JONES NO. 11-1
LOCATION	SEC. 179, BLK. 41, H&TC SUR.	SEC. 140, BLK.41, H&TC SUR.	SEC. 11, BLK. 1, WADE & HOOP
OWNER	MAXUS EXPLORATION CO.	MERIDIAN OIL, INC.	HNG OIL CO.
COMPLETED	10/14/87	09/27/85	--/--/00
SAMPLED	11/13/87	02/25/87	07/09/87
FORMATION	PERM-GRANITE WASH	PENN-CLEVELAND	PENN-MORROW
GEOLOGIC PROVINCE CODE	360	360	360
DEPTH, FEET	9908	9288	14980
WELLHEAD PRESSURE,PSIG	1685	3945	2700
OPEN FLOW, MCFD	1699	7500	24300
COMPONENT, MOLE PCT			
METHANE	69.5	82.5	97.1
ETHANE	11.4	9.2	0.5
PROPANE	5.6	4.1	0.1
N-BUTANE	1.7	0.9	0.0
ISOBUTANE	0.4	0.8	TRACE
N-PENTANE	0.6	0.3	0.0
ISOPENTANE	0.3	0.2	0.0
CYCLOPENTANE	0.1	TRACE	0.0
HEXANES PLUS	0.2	0.2	0.0
NITROGEN	1.0	0.8	0.3
OXYGEN	0.1	0.1	0.0
ARGON	TRACE	0.0	0.0
HYDROGEN	0.2	0.1	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	9.0	0.9	1.9
HELIUM	0.03	0.03	0.02
HEATING VALUE*	1176	1196	997
SPECIFIC GRAVITY	0.813	0.694	0.578

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 142 SAMPLE 18332	INDEX 143 SAMPLE 18438	INDEX 144 SAMPLE 18243
STATE	TEXAS	TEXAS	TEXAS
COUNTY	LAVACA	LIPSCOMB	LIVE OAK
FIELD	BORCHERS	DARDEN	SHARON LEE
WELL NAME	A. M. VAUGHN NO. 1	PINCKARD "B" NO. 6	BLANCHE HERRING NO. 1
LOCATION	JOHN ALLEY SUR., A-526	HT&B SUR.	NOT GIVEN
OWNER	HOWELL DRILLING, INC.	TXO PRODUCTION CORP.	TEXACO INC.
COMPLETED	--/--/87	--/--/87	06/23/85
SAMPLED	02/06/87	09/16/87	11/03/86
FORMATION	EOCE-YEGUA	PENN-CHEROKEE	CRET-SLIGO
GEOLOGIC PROVINCE CODE	220	360	220
DEPTH, FEET	3711	7740	16692
WELLHEAD PRESSURE,PSIG	1550	NOT GIVEN	9300
OPEN FLOW, MCFD	12000	1034	7000
COMPONENT, MOLE PCT			
METHANE	99.0	81.0	90.9
ETHANE	0.1	9.4	0.0
PROPANE	TRACE	4.6	0.1
N-BUTANE	0.0	1.6	0.0
ISOBUTANE	0.0	0.1	TRACE
N-PENTANE	0.0	0.6	0.0
ISOPENTANE	0.0	0.1	0.0
CYCLOPENTANE	0.0	0.1	0.0
HEXANES PLUS	0.0	0.3	0.0
NITROGEN	0.4	1.5	2.0
OXYGEN	TRACE	0.2	0.1
ARGON	0.0	0.0	0.0
HYDROGEN	TRACE	0.0	0.1
HYDROGEN SULFIDE**	TRACE	0.0	0.0
CARBON DIOXIDE	0.3	0.4	6.9
HELIUM	0.01	0.07	0.01
HEATING VALUE*	1005	1215	924
SPECIFIC GRAVITY	0.558	0.706	0.632

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 145 SAMPLE 18472	INDEX 146 SAMPLE 18381	INDEX 147 SAMPLE 18367
STATE	TEXAS	TEXAS	TEXAS
COUNTY	LOVING	MCMULLEN	MCMULLEN
FIELD	WHITE MULE	COW CREEK S	LA CHUSA
WELL NAME	TEXACO "35" NO. 1	JEFFERSON NO. 1	RIVES TRUST NO. 1
LOCATION	SEC. 35, BLK. 54, T-2, T&P S	CALVIN P. WRIGHT SUR., A-115	P. GUEYDAN SUR., A-600
OWNER	CITIES SERVICE OIL & GAS COR	FINA OIL & CHEMICAL CO.	CSX OIL & GAS CORP.
COMPLETED	04/25/86	12/02/85	04/--/86
SAMPLED	11/02/87	06/18/87	05/--/87
FORMATION	PENN-CRITTENDON	EOCE-WILCOX	CRET-SLIGO
GEOLOGIC PROVINCE CODE	430	220	220
DEPTH, FEET	15386	8300	15978
WELLHEAD PRESSURE,PSIG	1200	3182	11828
OPEN FLOW, MCFD	3000	1200	6878
COMPONENT, MOLE PCT			
METHANE	97.5	87.3	88.0
ETHANE	0.7	5.3	0.0
PROPANE	TRACE	3.1	TRACE
N-BUTANE	0.2	0.6	0.0
ISOBUTANE	0.0	0.8	0.0
N-PENTANE	0.0	0.1	0.0
ISOPENTANE	0.0	0.4	0.0
CYCLOPENTANE	0.0	0.1	0.0
HEXANES PLUS	0.1	0.2	0.0
NITROGEN	0.3	0.4	3.4
OXYGEN	0.0	0.0	0.5
ARGON	TRACE	0.0	0.0
HYDROGEN	0.0	0.1	0.5
HYDROGEN SULFIDE**	0.0	0.0	0.1
CARBON DIOXIDE	1.1	1.8	7.4
HELIUM	0.01	TRACE	0.01
HEATING VALUE*	1012	1136	895
SPECIFIC GRAVITY	0.576	0.665	0.642

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 148 SAMPLE 18403	INDEX 149 SAMPLE 18284	INDEX 150 SAMPLE 18355
STATE	TEXAS	TEXAS	TEXAS
COUNTY	MCMULLEN	NUECES	OCHILTREE
FIELD	RHODE RANCH	M-4	ALPAR
WELL NAME	WHEELER "C" NO. 3	STATE TRACT NO. 915-S	NITSCHKE "A" NO. 3
LOCATION	J. POITEVENT SUR., A-402	MUSTANG ISLAND AREA, BLK. 91	SEC. 110, BLK. 4T, T&NO SUR.
OWNER	CSX OIL & GAS CORP.	SEAGULL ENERGY EXP. & PROD.,	PHILLIPS PETROLEUM CO.
COMPLETED	10/20/85	--/--/86	12/24/86
SAMPLED	07/21/87	12/--/86	04/27/87
FORMATION	EOCE-WILCOX	OLIG-MARGINULINA & FRIO	PENN-MORROW U
GEOLOGIC PROVINCE CODE	220	955	360
DEPTH, FEET	8600	8300	7450
WELLHEAD PRESSURE,PSIG	2405	2200	1381
OPEN FLOW, MCFD	4000	3864	4400
COMPONENT, MOLE PCT			
METHANE	86.4	94.0	93.5
ETHANE	6.1	2.8	3.8
PROPANE	2.6	0.9	0.9
N-BUTANE	0.7	0.2	0.0
ISOBUTANE	0.3	0.4	TRACE
N-PENTANE	0.3	0.2	0.0
ISOPENTANE	0.2	0.0	0.0
CYCLOPENTANE	0.1	TRACE	0.0
HEXANES PLUS	0.2	0.1	0.0
NITROGEN	0.6	0.8	1.6
OXYGEN	0.1	TRACE	0.0
ARGON	TRACE	0.0	0.0
HYDROGEN	0.2	0.1	TRACE
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	2.2	0.3	0.1
HELIUM	TRACE	0.01	0.13
HEATING VALUE*	1119	1060	1040
SPECIFIC GRAVITY	0.665	0.597	0.589

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 151 SAMPLE 18427	INDEX 152 SAMPLE 18345	INDEX 153 SAMPLE 18418
STATE	TEXAS	TEXAS	TEXAS
COUNTY	OCHILTREE	OCHILTREE	OCHILTREE
FIELD	FARNSWORTH	HAMKER RANCH	HAMKER RANCH
WELL NAME	PAUL NO. 1-46	R. H. HOLLAND NO. 2	DANIEL KUNKEL NO. 2
LOCATION	SEC. 46, T4T, T&NO SUR.	SEC. 649, BLK. 43, H&TC SUR.	SEC. 739, BLK. 43, H&TC SUR.
OWNER	COURSON OIL & GAS, INC.	DIAMOND SHAMROCK EXPLORATION	MAXUS EXPLORATION CO.
COMPLETED	12/16/86	01/07/87	04/27/87
SAMPLED	08/25/87	04/06/87	08/04/87
FORMATION	PENN-CLEVELAND	PENN-MORROW L	PENN-MORROW L
GEOLOGIC PROVINCE CODE	360	360	360
DEPTH, FEET	6475	9900	9242
WELLHEAD PRESSURE,PSIG	1438	4605	2690
OPEN FLOW, MCFD	3900	14000	5600
COMPONENT, MOLE PCT			
METHANE	81.6	95.2	85.0
ETHANE	3.9	1.4	5.2
PROPANE	4.5	0.5	2.4
N-BUTANE	1.4	0.0	0.5
ISOBUTANE	0.3	0.2	0.5
N-PENTANE	0.3	0.0	0.0
ISOPENTANE	0.3	0.0	0.3
CYCLOPENTANE	0.1	0.0	0.0
HEXANES PLUS	0.1	0.0	0.0
NITROGEN	6.2	1.3	1.2
OXYGEN	0.1	0.2	0.2
ARGON	TRACE	TRACE	3.8
HYDROGEN	0.4	0.1	0.2
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.5	1.2	0.7
HELIUM	0.24	0.05	0.05
HEATING VALUE*	1113	1009	1065
SPECIFIC GRAVITY	0.691	0.588	0.668

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 154 SAMPLE 18287	INDEX 155 SAMPLE 18386	INDEX 156 SAMPLE 18402
STATE	TEXAS	TEXAS	TEXAS
COUNTY	OCHILTREE	PALO PINTO	PECOS
FIELD	LIPS W	RANCHO DE PAZ	FT. STOCKTON
WELL NAME	ODC NO. 2-53	MIKE HOLLAND NO. 1	ROBERTS "A" NO. 1
LOCATION	SEC. 53, BLK. R, AB&M SUR.	HENRY BIRD SUR., A-26	SEC. 2, BLK. 106, T&STL SUR.
OWNER	DIAMOND SHAMROCK EXPLORATION	UPHAM OIL & GAS CO.	GRAHAM, BILL J., OIL & GAS
COMPLETED	07/29/86	02/25/85	--/--/87
SAMPLED	01/10/87	06/20/87	07/14/87
FORMATION	PENN-CLEVELAND	PENN-BEND CONGLOMERATE	PERM-YATES
GEOLOGIC PROVINCE CODE	360	425	430
DEPTH, FEET	6638	3400	3171
WELLHEAD PRESSURE,PSIG	1320	1479	555
OPEN FLOW, MCFD	8400	6900	3200
COMPONENT, MOLE PCT			
METHANE	82.9	78.0	84.8
ETHANE	9.0	9.9	4.3
PROPANE	4.3	4.3	2.4
N-BUTANE	1.1	0.9	0.8
ISOBUTANE	0.5	0.9	0.2
N-PENTANE	0.3	0.2	0.2
ISOPENTANE	0.1	0.3	0.2
CYCLOPENTANE	0.1	TRACE	0.1
HEXANES PLUS	0.1	0.1	0.2
NITROGEN	1.1	4.7	6.3
OXYGEN	TRACE	0.2	0.1
ARGON	0.0	0.0	TRACE
HYDROGEN	0.1	0.1	0.3
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.3	0.2	0.1
HELIUM	0.06	0.12	0.05
HEATING VALUE*	1193	1172	1062
SPECIFIC GRAVITY	0.685	0.710	0.654

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 157 SAMPLE 18348	INDEX 158 SAMPLE 18333	INDEX 159 SAMPLE 18448
STATE	TEXAS	TEXAS	TEXAS
COUNTY	POTTER	SHERMAN	TERRELL
FIELD	NOT GIVEN	COLDWATER RANCH	BROWN-BASSETT
WELL NAME	BIVINS RANCH NO. 1-2	COLDWATER "C" NO. 10	HERMAN 8 NO. 1 (LOWER ZONE)
LOCATION	SEC. 2, BLK. 4, ACH&B SUR.	SEC. 37, BLK. 3-B, GH&H SUR.	SEC. 8, BLK. 161, TMRR SUR.
OWNER	BAKER & TAYLOR DRILLING CO.	PHILLIPS PETROLEUM CO.	TENNECO OIL EXP. & PROD. CO.
COMPLETED	--/--/87	10/20/86	10/16/84
SAMPLED	04/15/87	03/26/87	09/28/87
FORMATION	PERM-WICHITA-ALBANY	PENN-TONKAWA	ORDO-FUSSELMAN
GEOLOGIC PROVINCE CODE	440	360	430
DEPTH, FEET	3300	4844	12806
WELLHEAD PRESSURE,PSIG	NOT GIVEN	1055	1781
OPEN FLOW, MCFD	2200	4800	5000
COMPONENT, MOLE PCT			
METHANE	58.4	74.7	95.7
ETHANE	3.0	6.9	1.2
PROPANE	1.6	4.7	0.0
N-BUTANE	0.4	1.1	0.3
ISOBUTANE	0.5	0.6	0.0
N-PENTANE	0.0	0.2	0.2
ISOPENTANE	0.1	0.2	0.0
CYCLOPENTANE	0.0	0.0	TRACE
HEXANES PLUS	0.1	0.1	0.1
NITROGEN	33.0	11.0	0.6
OXYGEN	0.0	TRACE	TRACE
ARGON	0.2	TRACE	TRACE
HYDROGEN	0.0	0.1	0.0
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.6	0.1	1.9
HELIUM	2.32	0.21	0.02
HEATING VALUE*	727	1082	1014
SPECIFIC GRAVITY	0.739	0.716	0.592

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 160 SAMPLE 18450	INDEX 161 SAMPLE 18474	INDEX 162 SAMPLE 18322
STATE	TEXAS	TEXAS	TEXAS
COUNTY	TERRELL	VAL VERDE	WEBB
FIELD	BROWN-BASSETT	BAXTER-WENTWORTH EXT.	LAREDO LOBO
WELL NAME	HERMAN 8 NO. 1 (UPPER ZONE)	BUNGER "6" NO. 1	ACEVEDO-HAERING NO. 2
LOCATION	SEC. 8, BLK. 161, TMRR SUR.	SEC. 6, BLK. Q3, TC&RR SUR.	D. GARCIA SUR. 44, A-54
OWNER	TENNECO OIL EXP. & PROD. CO.	FELMONT OIL CORP.	CONSOLIDATED OIL & GAS, INC.
COMPLETED	11/16/86	03/25/86	02/--/85
SAMPLED	09/28/87	11/--/87	03/03/87
FORMATION	PENN-STRAWN	PENN-CANYON	EOCE-WILCOX
GEOLOGIC PROVINCE CODE	430	430	220
DEPTH, FEET	11631	3654	6336
WELLHEAD PRESSURE,PSIG	2329	370	2300
OPEN FLOW, MCFD	3725	633	7800
COMPONENT, MOLE PCT			
METHANE	94.8	88.6	89.0
ETHANE	0.2	3.1	5.4
PROPANE	0.0	1.5	2.2
N-BUTANE	0.3	0.6	0.5
ISOBUTANE	0.0	TRACE	0.7
N-PENTANE	0.3	0.1	0.2
ISOPENTANE	0.0	0.3	0.2
CYCLOPENTANE	TRACE	0.0	0.1
HEXANES PLUS	0.1	0.0	0.4
NITROGEN	0.6	4.5	0.4
OXYGEN	TRACE	0.8	0.1
ARGON	TRACE	0.1	0.0
HYDROGEN	0.0	0.0	0.1
HYDROGEN SULFIDE**	TRACE	0.0	0.0
CARBON DIOXIDE	3.6	0.3	0.7
HELIUM	0.02	0.09	TRACE
HEATING VALUE*	995	1030	1137
SPECIFIC GRAVITY	0.606	0.628	0.649

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 163 SAMPLE 18317	INDEX 164 SAMPLE 18346	INDEX 165 SAMPLE 18328
STATE	TEXAS	TEXAS	TEXAS
COUNTY	WHEELER	WHEELER	WINKLER
FIELD	B & B	LISTER	CRITTENDON
WELL NAME	REID-JACKSON NO. 1	STREET E B NO. 1	TUBB ESTATE NO. 1-21
LOCATION	SEC. 9, R&E SUR.	SEC. 15, BLK.L, J. M. LINDSE	NOT GIVEN
OWNER	HORIZON OIL & GAS CO.	SUN EXPLORATION & PRODUCTION	HERITAGE RESOURCES, INC.
COMPLETED	05/27/85	01/15/87	07/--/86
SAMPLED	02/27/87	04/--/87	03/10/87
FORMATION	PENN-GRANITE WASH	PENN-GRANITE WASH	ORDO-FUSSELMAN
GEOLOGIC PROVINCE CODE	360	360	430
DEPTH, FEET	12060	12251	18000
WELLHEAD PRESSURE,PSIG	4250	2725	3600
OPEN FLOW, MCFD	5400	11939	18000
COMPONENT, MOLE PCT			
METHANE	79.0	85.5	84.1
ETHANE	11.1	7.8	0.8
PROPANE	4.9	3.4	0.1
N-BUTANE	1.3	0.7	0.0
ISOBUTANE	1.0	0.6	TRACE
N-PENTANE	0.5	0.1	0.0
ISOPENTANE	0.3	0.2	0.0
CYCLOPENTANE	0.2	0.0	0.0
HEXANES PLUS	0.5	0.1	0.0
NITROGEN	0.7	1.4	10.6
OXYGEN	0.0	0.0	2.7
ARGON	0.0	0.0	0.1
HYDROGEN	0.1	0.1	TRACE
HYDROGEN SULFIDE**	0.0	0.0	0.1
CARBON DIOXIDE	0.4	0.2	1.4
HELIUM	0.03	0.04	0.03
HEATING VALUE*	1271	1156	870
SPECIFIC GRAVITY	0.731	0.663	0.633

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 166 SAMPLE 18329	INDEX 167 SAMPLE 18344	INDEX 168 SAMPLE 18447
STATE	TEXAS	TEXAS	UTAH
COUNTY	WINKLER	YOUNG	JUAB
FIELD	CRITTENDON	GOOSENECK	FISH SPRINGS
WELL NAME	TUBB ESTATE NO. 23	WILEY NO. 1	SPRING WATER SAMPLE
LOCATION	NOT GIVEN	J. EDDLEMAN SUR., A-1728	T11S, R14W
OWNER	HERITAGE RESOURCES, INC.	RANGER OPERATING CO.	CRAFTS, MARK
COMPLETED	07/--/86	04/26/86	--/--/87
SAMPLED	10/21/86	04/02/87	09/25/87
FORMATION	PENN-STRAWN	MISS---	NOT GIVEN
GEOLOGIC PROVINCE CODE	430	425	575
DEPTH, FEET	13900	4298	NOT GIVEN
WELLHEAD PRESSURE,PSIG	7800	1780	NOT GIVEN
OPEN FLOW, MCFD	20000	7900	NOT GIVEN
COMPONENT, MOLE PCT			
METHANE	96.8	72.9	0.2
ETHANE	1.2	10.0	0.0
PROPANE	0.2	6.1	TRACE
N-BUTANE	0.0	1.8	0.0
ISOBUTANE	0.1	0.8	TRACE
N-PENTANE	0.0	0.6	0.0
ISOPENTANE	TRACE	0.4	0.0
CYCLOPENTANE	0.0	0.1	0.1
HEXANES PLUS	0.0	0.3	0.0
NITROGEN	0.7	6.3	93.2
OXYGEN	TRACE	0.1	2.9
ARGON	TRACE	TRACE	1.1
HYDROGEN	0.1	0.1	0.0
HYDROGEN SULFIDE**	0.0	0.0	TRACE
CARBON DIOXIDE	0.9	0.3	2.4
HELIUM	0.01	0.17	0.03
HEATING VALUE*	1011	1226	6
SPECIFIC GRAVITY	0.575	0.761	0.989

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 169 SAMPLE 18449	INDEX 170 SAMPLE 18283	INDEX 171 SAMPLE 18388
STATE	UTAH	UTAH	WEST VIRGINIA
COUNTY	UINTAH	UINTAH	LEWIS
FIELD	EVACUATION CREEK	ROCK	ASPINALL-FINSTER
WELL NAME	EVACUATION CREEK-STATE-A NO1	FEDERAL "A" NO. 1	MCDONALD NO. 2-A
LOCATION	SEC. 2, T12S, R25E	SEC. 12, T11S, R23E	COLLIN SETTLEMENT, PETERSON
OWNER	TXO PRODUCTION CORP.	TXO PRODUCTION CORP.	PETROLEUM RESOURCES, INC.
COMPLETED	11/19/85	12/23/85	09/14/85
SAMPLED	09/25/87	12/23/86	06/27/87
FORMATION	CRET-DAKOTA	EOCE-WASATCH	DEVO-ORISKANY
GEOLOGIC PROVINCE CODE	575	575	160
DEPTH, FEET	8107	4900	7595
WELLHEAD PRESSURE,PSIG	2800	1600	2450
OPEN FLOW, MCFD	3220	800	150
COMPONENT, MOLE PCT			
METHANE	86.4	93.0	90.6
ETHANE	6.3	3.0	5.3
PROPANE	2.2	0.8	1.0
N-BUTANE	0.8	0.3	0.0
ISOBUTANE	0.3	0.2	0.3
N-PENTANE	0.7	0.1	0.0
ISOPENTANE	0.0	0.1	0.0
CYCLOPENTANE	0.2	TRACE	0.0
HEXANES PLUS	0.5	0.1	0.0
NITROGEN	1.5	1.2	1.1
OXYGEN	0.1	0.2	TRACE
ARGON	TRACE	TRACE	0.0
HYDROGEN	0.0	0.1	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.9	0.9	1.6
HELIUM	0.04	TRACE	0.04
HEATING VALUE*	1147	1047	1049
SPECIFIC GRAVITY	0.670	0.605	0.615

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 172 SAMPLE 18425	INDEX 173 SAMPLE 18414	INDEX 174 SAMPLE 18239
STATE	WEST VIRGINIA	WEST VIRGINIA	WYOMING
COUNTY	MINGO	RALEIGH	LINCOLN
FIELD	NOT GIVEN	NOT GIVEN	WHISKEY BUTTE
WELL NAME	NO. C-1	NEW RIVER CO. NO. 1	WHISKEY BUTTE FEDERAL NO.1-8
LOCATION	RIGHT FORK OF TRACE CREEK	TOWN DIST., BECKLEY QUAD.	SEC. 8, T20N, R112W
OWNER	SENECA-UPSHUR DEVELOPMENT CO	ASHLAND EXPLORATION, INC.	AMOCO PRODUCTION CO.
COMPLETED	--/--/87	10/01/85	04/01/85
SAMPLED	08/14/87	07/28/87	10/29/86
FORMATION	DEVO-BROWN SHALE	SILU-TUSCARORA	CRET-FRONTIER
GEOLOGIC PROVINCE CODE	160	160	535
DEPTH, FEET	NOT GIVEN	2111	11211
WELLHEAD PRESSURE,PSIG	NOT GIVEN	1200	4272
OPEN FLOW, MCFD	NOT GIVEN	1185	1200
COMPONENT, MOLE PCT			
METHANE	77.9	8.7	81.3
ETHANE	13.7	0.2	11.4
PROPANE	4.8	0.0	3.7
N-BUTANE	1.0	0.0	0.7
ISOBUTANE	0.4	0.0	0.7
N-PENTANE	0.2	0.0	0.2
ISOPENTANE	0.3	0.0	0.2
CYCLOPENTANE	0.0	0.0	0.1
HEXANES PLUS	0.0	0.0	0.2
NITROGEN	1.3	1.6	0.8
OXYGEN	TRACE	0.1	0.1
ARGON	TRACE	0.0	TRACE
HYDROGEN	0.4	0.0	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	0.1	89.4	0.7
HELIUM	0.03	0.08	0.01
HEATING VALUE*	1227	91	1202
SPECIFIC GRAVITY	0.705	1.433	0.695

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 175 SAMPLE 18286	INDEX 176 SAMPLE 18454	INDEX 177 SAMPLE 18493
STATE	WYOMING	WYOMING	WYOMING
COUNTY	NATRONA	SWEETWATER	SWEETWATER
FIELD	FRENCHIE DRAW	BLUE FOREST	LINCOLN ROAD
WELL NAME	GRAHAM UNIT NO. 21	BLUE FOREST NO. 32-1	GOVT. CE BREHM NO. 1
LOCATION	SEC. 22, T37N, R89W	SEC. 1, T24N, R111W	SEC. 3, T24N, R111W
OWNER	EXXON CO., U.S.A.	ITR PETROLEUM, INC.	TEXACO INC.
COMPLETED	07/09/85	06/09/87	03/12/87
SAMPLED	01/12/87	10/02/87	12/02/87
FORMATION	EOCE-FORT UNION L	CRET-DAKOTA	CRET-DAKOTA C
GEOLOGIC PROVINCE CODE	530	535	535
DEPTH, FEET	10196	10826	10536
WELLHEAD PRESSURE,PSIG	3050	4308	4093
OPEN FLOW, MCFD	2041	10758	7300
COMPONENT, MOLE PCT			
METHANE	93.0	84.1	86.3
ETHANE	2.7	7.5	6.4
PROPANE	0.7	4.3	3.3
N-BUTANE	TRACE	1.2	0.8
ISOBUTANE	0.4	0.6	0.4
N-PENTANE	0.0	0.3	0.3
ISOPENTANE	0.0	0.0	0.1
CYCLOPENTANE	TRACE	0.1	0.1
HEXANES PLUS	0.1	0.2	0.2
NITROGEN	0.4	1.0	1.0
OXYGEN	0.1	TRACE	0.1
ARGON	0.0	0.1	TRACE
HYDROGEN	0.1	0.0	0.0
HYDROGEN SULFIDE**	0.0	TRACE	0.0
CARBON DIOXIDE	2.6	0.5	0.8
HELIUM	TRACE	0.01	0.01
HEATING VALUE*	1027	1186	1150
SPECIFIC GRAVITY	0.611	0.684	0.666

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 1. - SAMPLES FROM GAS AND OIL WELLS IN THE UNITED STATES

	INDEX 178 SAMPLE 18379
STATE	WYOMING
COUNTY	SWEETWATER
FIELD	MARIANNE
WELL NAME	MADEX-FEDERAL NO. 18-1
LOCATION	SEC. 18, T20N, R102W
OWNER	BURTON-HAWKS, INC.
COMPLETED	04/14/80
SAMPLED	06/17/87
FORMATION	CRET-FRONTIER
GEOLOGIC PROVINCE CODE	535
DEPTH, FEET	5549
WELLHEAD PRESSURE,PSIG	1100
OPEN FLOW, MCFD	275
COMPONENT, MOLE PCT	
METHANE	94.6
ETHANE	2.2
PROPANE	0.7
N-BUTANE	0.0
ISOBUTANE	0.3
N-PENTANE	0.0
ISOPENTANE	TRACE
CYCLOPENTANE	TRACE
HEXANES PLUS	0.1
NITROGEN	1.6
OXYGEN	0.0
ARGON	0.0
HYDROGEN	TRACE
HYDROGEN SULFIDE**	0.0
CARBON DIOXIDE	0.3
HELIUM	0.02
HEATING VALUE*	1035
SPECIFIC GRAVITY	0.590

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 2. - SAMPLES FROM PIPELINES IN THE UNITED STATES

	INDEX 1 SAMPLE 18352	INDEX 2 SAMPLE 18408	INDEX 3 SAMPLE 18441
STATE	ARKANSAS	OHIO	PENNSYLVANIA
COUNTY	JOHNSON	TUSCARAWAS	ARMSTRONG
FIELD	SPADRA	SOUTHERN OHIO FIELDS	INDIANA, LOCAL PRODUCTION
LOCATION	SEC. 6, T9N, R23W	24 IN. DISCHARGE	12 IN SUCTION
OWNER	TXO PRODUCTION CORP.	EAST OHIO GAS CO.	PEOPLES NATURAL GAS CO.
SAMPLED	04/20/87	07/21/87	09/17/87
FORMATION	PENN-HALE	NOT GIVEN	DEVO-BRADFORD U
GEOLOGIC PROVINCE CODE	345	160	160
DEPTH, FEET	NOT GIVEN	NOT GIVEN	NOT GIVEN
PRESSURE,PSIG	2590	620	90
FLOW,MCFD	2000	60000	10000
COMPONENT, MOLE PCT			
METHANE	86.5	83.1	94.3
ETHANE	1.1	6.6	3.3
PROPANE	0.1	2.5	0.5
N-BUTANE	0.0	0.8	0.3
ISOBUTANE	TRACE	0.5	0.0
N-PENTANE	0.0	0.6	0.4
ISOPENTANE	0.0	0.0	0.0
CYCLOPENTANE	0.0	0.2	0.1
HEXANES PLUS	0.0	0.7	0.2
NITROGEN	8.7	4.5	0.7
OXYGEN	2.3	0.0	TRACE
ARGON	0.1	0.0	TRACE
HYDROGEN	TRACE	0.3	TRACE
HYDROGEN SULFIDE	0.0	0.0	0.0
CARBON DIOXIDE	1.0	TRACE	0.1
HELIUM	0.05	0.13	0.08
HEATING VALUE*	899	1139	1066
SPECIFIC GRAVITY	0.619	0.682	0.597

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 2. - SAMPLES FROM PIPELINES IN THE UNITED STATES

	INDEX 4 SAMPLE 18442	INDEX 5 SAMPLE 18261	INDEX 6 SAMPLE 18407
STATE	PENNSYLVANIA	TEXAS	WEST VIRGINIA
COUNTY	INDIANA	PECOS	KANAWHA
FIELD	ROCHESTER MILLS/ELK RUN	PERMIAN BASIN AREA	SO. CENTRAL WEST VA. FIELDS
LOCATION	8 IN DISCHARGE	36 IN. OUTLET	24 IN. DISCHARGE
OWNER	CONSOLIDATED GAS SUPPLY CORP	OASIS PIPE LINE CO.	COLUMBIA GAS TRANSMISSION CO
SAMPLED	09/17/87	11/18/86	07/17/87
FORMATION	NOT GIVEN	NOT GIVEN	NOT GIVEN
GEOLOGIC PROVINCE CODE	160	430	160
DEPTH, FEET	NOT GIVEN	NOT GIVEN	NOT GIVEN
PRESSURE,PSIG	600	900	550
FLOW,MCFD	14000	101700	32000
COMPONENT, MOLE PCT			
METHANE	95.0	88.6	80.8
ETHANE	3.0	5.4	10.7
PROPANE	0.3	1.9	4.3
N-BUTANE	0.3	0.3	1.2
ISOBUTANE	0.0	0.4	0.6
N-PENTANE	0.4	0.0	0.3
ISOPENTANE	0.0	0.2	0.2
CYCLOPENTANE	0.1	0.0	0.1
HEXANES PLUS	0.2	0.0	0.4
NITROGEN	0.5	1.8	1.0
OXYGEN	0.0	0.0	0.0
ARGON	TRACE	0.0	TRACE
HYDROGEN	0.1	0.6	0.4
HYDROGEN SULFIDE	0.0	0.0	0.0
CARBON DIOXIDE	0.1	0.8	0.1
HELIUM	0.07	0.07	0.06
HEATING VALUE*	1062	1078	1227
SPECIFIC GRAVITY	0.592	0.627	0.701

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 2. - SAMPLES FROM PIPELINES IN THE UNITED STATES

	INDEX 7 SAMPLE 18405	INDEX 8 SAMPLE 18406
STATE	WEST VIRGINIA	WEST VIRGINIA
COUNTY	SUMMERS	WAYNE
FIELD	EASTERN KENTUCKY FIELDS	EASTERN KY & SW W. VA FIELDS
LOCATION	20 IN. DISCHARGE	20 IN. DISCHARGE
OWNER	COLUMBIA GAS TRANSMISSION CO	COLUMBIA GAS TRANSMISSION CO
SAMPLED	07/17/87	07/15/87
FORMATION	NOT GIVEN	NOT GIVEN
GEOLOGIC PROVINCE CODE	160	160
DEPTH, FEET	NOT GIVEN	NOT GIVEN
PRESSURE,PSIG	174	320
FLOW,MCFD	79000	97000
COMPONENT, MOLE PCT		
METHANE	86.3	79.9
ETHANE	10.0	12.6
PROPANE	1.5	4.3
N-BUTANE	0.2	0.8
ISOBUTANE	0.2	0.5
N-PENTANE	0.0	0.0
ISOPENTANE	0.1	0.3
CYCLOPENTANE	0.0	0.0
HEXANES PLUS	0.0	0.0
NITROGEN	1.1	1.2
OXYGEN	TRACE	0.0
ARGON	TRACE	TRACE
HYDROGEN	0.5	0.5
HYDROGEN SULFIDE	0.0	0.0
CARBON DIOXIDE	TRACE	TRACE
HELIUM	0.06	0.05
HEATING VALUE*	1112	1201
SPECIFIC GRAVITY	0.630	0.686

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 3. - SAMPLES FROM GAS AND OIL WELLS IN FOREIGN COUNTRIES

	INDEX 1 SAMPLE 18305	INDEX 2 SAMPLE 18306	INDEX 3 SAMPLE 18307
COUNTRY	CANADA	CANADA	CANADA
STATE OR PROVINCE	NOVA SCOTIA	NOVA SCOTIA	NOVA SCOTIA
FIELD	GLENELG	GLENELG	GLENELG
WELL NAME	GLENELG NO. N-49	GLENELG NO. N-49 ZONE 1	GLENELG NO. N-49 ZONE 2
LOCATION	43D 38'59"N 60D 07'02"W OFFS	43D 38'59"N 60D 07'02"W OFFS	43D 38'59"N 60D 07'02"W OFFS
OWNER	SHELL CANADA, LTD.	SHELL CANADA, LTD.	SHELL CANADA, LTD.
COMPLETED	08/04/86	08/04/86	08/04/86
SAMPLED	02/--/87	02/--/87	02/--/87
FORMATION	CRET-MISSISAUGA	CRET-MISSISAUGA	CRET-MISSISAUGA
GEOLOGIC PROVINCE CODE	000	000	000
DEPTH, FEET	11802	11802	11404
WELLHEAD PRESSURE,PSIG	4400	4400	4400
OPEN FLOW, MCFD	100000	100000	100000
COMPONENT, MOLE PCT			
METHANE	85.0	89.6	91.0
ETHANE	3.8	4.6	4.3
PROPANE	1.5	1.9	1.6
N-BUTANE	0.2	0.4	0.3
ISOBUTANE	0.4	0.3	0.2
N-PENTANE	0.0	0.1	0.1
ISOPENTANE	0.1	0.1	0.2
CYCLOPENTANE	0.1	TRACE	0.0
HEXANES PLUS	0.1	0.1	0.1
NITROGEN	5.6	0.5	0.5
OXYGEN	1.4	0.1	TRACE
ARGON	0.1	TRACE	TRACE
HYDROGEN	TRACE	0.1	0.1
HYDROGEN SULFIDE**	0.0	0.0	0.0
CARBON DIOXIDE	1.6	2.3	1.6
HELIUM	0.01	0.01	0.01
HEATING VALUE*	1001	1077	1075
SPECIFIC GRAVITY	0.650	0.638	0.625

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

TABLE 3. - SAMPLES FROM GAS AND OIL WELLS IN FOREIGN COUNTRIES

	INDEX 4 SAMPLE 18308	INDEX 5 SAMPLE 18309
COUNTRY	CANADA	CANADA
STATE OR PROVINCE	NOVA SCOTIA	NOVA SCOTIA
FIELD	GLENELG	PANUKE
WELL NAME	GLENELG NO. N-49 ZONE 3	PANUKE NO. B-90
LOCATION	43D 38'59"N 60D 07'02"W OFFS	43D 49'11"N 60D 42'34"W OFFS
OWNER	SHELL CANADA, LTD.	SHELL CANADA, LTD.
COMPLETED	08/04/86	09/24/86
SAMPLED	02/--/87	02/--/87
FORMATION	CRET-MISSISAUGA	CRET-MISSISAUGA
GEOLOGIC PROVINCE CODE	000	000
DEPTH, FEET	11134	7525
WELLHEAD PRESSURE,PSIG	4400	600
OPEN FLOW, MCFD	100000	400
COMPONENT, MOLE PCT		
METHANE	91.1	77.9
ETHANE	4.2	2.0
PROPANE	1.5	4.6
N-BUTANE	0.3	3.2
ISOBUTANE	0.2	3.1
N-PENTANE	0.1	1.0
ISOPENTANE	0.1	1.1
CYCLOPENTANE	0.1	TRACE
HEXANES PLUS	0.1	0.5
NITROGEN	0.6	3.8
OXYGEN	0.1	0.1
ARGON	TRACE	TRACE
HYDROGEN	0.1	0.1
HYDROGEN SULFIDE**	0.0	0.0
CARBON DIOXIDE	1.7	2.7
HELIUM	0.01	0.02
HEATING VALUE*	1072	1272
SPECIFIC GRAVITY	0.626	0.802

* CALCULATED GROSS BTU PER CU FT, DRY, AT 60 DEGREES FAHRENHEIT AND 30 INCHES OF MERCURY
** DUE TO THE ABSORPTION OF H2S DURING SAMPLING, THE REPORTED RESULTS MAY NOT BE RELIABLE

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