



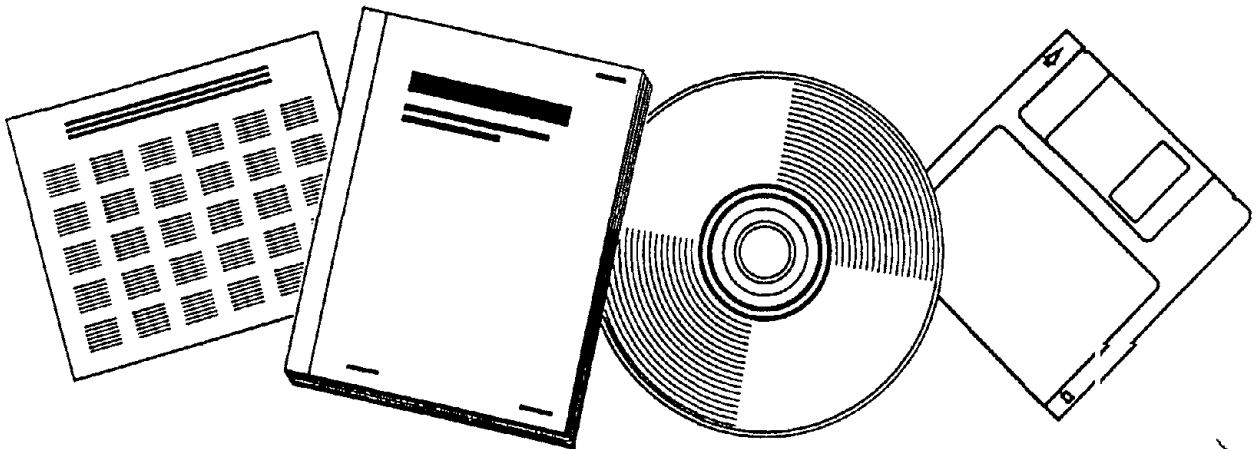
PB210254

NTIS[®]
Information is our business.

ANALYSES OF 169 CRUDE OILS FROM 122 FOREIGN OILFIELDS

BARTLESVILLE ENERGY RESEARCH CENTER
BARTLESVILLE, OK

MAY 72



U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

Bureau of Mines Information Circular/1972

PB 210 254

Analyses of 169 Crude Oils From 122 Foreign Oilfields



REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

UNITED STATES DEPARTMENT OF THE INTERIOR

118

Information Circular 8542

Analyses of 169 Crude Oils From 122 Foreign Oilfields

**By E. P. Ferrero and Dorothy T. Nichols
Bartlesville Energy Research Center, Bartlesville, Okla.**



**UNITED STATES DEPARTMENT OF THE INTERIOR
Rogers C. B. Morton, Secretary**

**BUREAU OF MINES
Elburt F. Osborn, Director**

This publication has been cataloged as follows:

Ferrero, Edward P

Analyses of 169 crude oils from 122 foreign oilfields, by
E. P. Ferrero and Dorothy T. Nichols. [Washington] U.S.
Dept. of the Interior, Bureau of Mines [1972]

113 p. tables. (U.S. Bureau of Mines. Information circular 8542)
Includes bibliography.

1. Petroleum--Analysis. I. Nichols, Dorothy T. II. Title. (Series)

TN23.U71 no. 8542 622.06173

U.S. Dept. of the Int. Library

BIBLIOGRAPHIC DATA SHEET	1. Report No. BuMines IC 8542	2.	3. Recipient's Accession No.
	4. Title and Subtitle Analyses of 169 Crude Oils From 122 Foreign Oilfields		5. Report Date May 1972
		6. Performing Organization Code	
7. Author(s) E. P. Ferrero and Dorothy T. Nichols		8. Performing Organization Rept. No. BuMines IC 8542	
9. Performing Organization Name and Address Bartlesville Energy Research Center Bureau of Mines, USDI P.O. Box 1398 Bartlesville, OK 74003		10. Project/Task/Work Unit No.	
		11. Contract/Grant No.	
12. Sponsoring Agency Name and Address Division of Petroleum and Natural Gas Bureau of Mines U.S. Department of the Interior Washington, DC 20240		13. Type of Report & Period Covered Research	
		14. Sponsoring Agency Code	
15. Supplementary Notes			
16. Abstracts Crude oils from fields throughout the world are analyzed by the Bureau of Mines to determine the characteristics of the oils and their contribution to the petroleum resources of the world. Analyses are reported for 169 foreign crude oil samples from 122 oilfields in Africa, Asia, Australia, Caribbean, Europe, North America, and South America. Tables show the geographic and geologic origin of the samples, companies that supplied the samples, annual production for the fields, general characteristics and analytical and computed data, hydrocarbon-type data, cumulative production of the larger fields, and references to sources of geological and field development information. The analyses were made by the Bureau of Mines routine methods and comparisons may be made with more than 8,000 other such analyses.			
17. Key Words and Document Analysis. 17a. Descriptors Foreign Crude Oil Analyses Foreign Crude Oil Production Fossil Fuel Deposits Chemical Composition Petroleum Geology			
17b. Identifiers/Open-Ended Terms			
17c. COSATI Field/Group 07C			
18. Distribution Statement Release unlimited by NTIS.		19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages 113
		20. Security Class (This Page) UNCLASSIFIED	22. Price \$3.00/\$0.95

CONTENTS

	<u>Page</u>
Abstract.....	1
Introduction.....	1
Acknowledgments.....	2
Discussion.....	2
Africa.....	22
Asia (Far East).....	22
Asia (Middle East).....	22
Australia.....	22
Caribbean.....	23
Europe.....	23
North America.....	23
South America.....	23
Crude oil analyses.....	23
Bibliography.....	109

TABLES

1. Geographic and geologic origin of samples.....	3
2. Source of samples.....	6
3. General characteristics and analytical and computed data.....	10
4. Hydrocarbon-type data.....	14
5. Production of foreign oilfields.....	18
6. Cumulative production of largest foreign fields.....	21

ANALYSES OF 169 CRUDE OILS FROM 122 FOREIGN OILFIELDS

by

E. P. Ferrero¹ and Dorothy T. Nichols²

ABSTRACT

Crude oils from fields throughout the world are analyzed by the Bureau of Mines to determine the characteristics of the oils and their contribution to the petroleum resources of the world. Analyses are reported for 169 foreign crude oil samples from 122 oilfields in Africa, Asia, Australia, the Caribbean, Europe, North America, and South America. Tables show the geographic and geologic origin of the samples, names of companies that supplied the samples, annual production for the fields, general characteristics and analytical and computed data, hydrocarbon-type data, cumulative production of the larger fields, and references to sources of geological and field development information. The analyses were made by the Bureau of Mines routine method and comparisons may be made with more than 8,000 other such analyses.

INTRODUCTION

Crude oil characteristics and properties are of interest to producers, refiners, and marketers of petroleum, to industrial consumers, and to State and Federal agencies. Geologic data and chemical and physical properties are also of interest to persons who perform petroleum exploration and petroleum product research. To supply this information, the Bureau of Mines obtains and analyzes crude oil samples from fields throughout the world.

This report presents the results of crude oil analyses of 169 samples from 122 fields in 27 countries.

The analyses were made by the Bureau of Mines routine method (62),³ which has remained basically unchanged for 47 years. Although additional data have been determined and reported, valid comparisons may be made between these and older Bureau of Mines analyses. The significance and interpretations of the analytical and computed data were explained by Smith and Hale (61), and by Smith, Smith, and McKinney (63).

¹Chemist.

²Physical science technician.

³Underlined numbers in parentheses refer to items in the bibliography at the end of this report.

Publications (3, 13) that contain other foreign crude oil analyses and/or bibliographies may be obtained from the Branch of Publications Distribution, Bureau of Mines, U.S. Department of the Interior, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

ACKNOWLEDGMENTS

Grateful acknowledgment is made to the oil companies that supplied crude oil samples and sample information, and permitted publication of the analyses.

DISCUSSION

Analyses are included for 47 samples from Africa, 51 from Asia (seven from the Far East and 44 from the Middle East), nine from Australia, eight from the Caribbean (Cuba), eight from Europe, 10 from North America (Canada), and 36 from South America. Table 1 shows the geographic and geologic origins of the samples. The oil companies that contributed the samples are shown in table 2.

General characteristics and analytical data for the samples are shown in table 3. Table 4 gives hydrocarbon-type data. The data were obtained from the individual analyses which are summarized in sequence by item number in tables 1-4.

The correlation index (CI) data shown on the analyses and in table 3 were calculated from the method of Smith (60). Generally, a low CI value indicates a highly paraffinic fraction; a high CI value indicates a more naphthenic-aromatic fraction.

The data in table 3 listed under "Percent on gasoline-free basis" under "Characteristics of residuum" were obtained by calculating the percent residuum of that portion of the crude oil boiling above fraction 7 (392° F).

The hydrocarbon-type data (table 4) were computed by the procedures of McKinney and Garton (38), Smith (60), and Smith and Hale (61). Data reported include volume-percent aromatics and paraffin-naphthene in the naphtha and gas oil, and weight-percent hydrocarbon ring in the paraffin-naphthene portion of the naphtha and gas oil. In table 4, distillate in fractions 1 through 7 is designated as naphtha, and distillate in fractions 8 through 12, as gas oil.

Table 5 gives production data for each oilfield; table 6 gives cumulative production data for the 40 largest oilfields.

TABLE 1. - Geographic and geologic origin of samples

Item	Continent and country	Field	Producing formation	Depth, feet	Sample	Reference
Africa:						
1	Algeria.....	Edjeleh.....	Carboniferous.....	N.A.	71042	-
2	..do.....	..do.....	Devonian.....	N.A.	71041	-
3	..do.....	Hassi Messaoud.....	Cambro-Ordovician.....	N.A.	67056	(52, 55)
4	..do.....	Tin Fouye.....	Devonian.....	N.A.	71043	(17)
5	..do.....	..do.....	..do.....	N.A.	71044	(17)
6	..do.....	Zarzaitaine.....	..do.....	N.A.	71045	-
7	Egypt.....	Asl.....	Eocene.....	N.A.	50088	(20)
8	..do.....	El Alamein.....	Cretaceous.....	N.A.	70011	(17)
9	..do.....	El Morgan.....	Miocene.....	N.A.	69069	(20)
10	..do.....	Sudr.....	Eocene.....	N.A.	50089	(20)
11	Gabon.....	Batanga.....	Senonian, Cretaceous.....	5,986- 6,183	68052	(20)
12	..do.....	Gamba.....	Gamba, Cretaceous.....	2,020- 3,090	68046	(11)
13	..do.....	Lopez, Cap.....	Senonian, Cretaceous.....	5,396- 5,674	68049	(20)
14	..do.....	Lopez, Nord.....	..do.....	5,632- 5,904	68050	(20)
15	..do.....	Pointe Clairette.....	..do.....	3,608- 5,838	68047	(20)
16	..do.....	Tchenque.....	Mandorove, Miocene.....	3,280- 4,169	68048	(20)
17	Libya.....	Dahra.....	Paleocene.....	N.A.	67062	(5)
18	..do.....	Ed Dib.....	Gir, L 1-A, Eocene.....	3,698- 3,759	68036	(5)
19	..do.....	..do.....	Gir, L 1-P, Eocene.....	2,666- 2,697	68037	(5)
20	..do.....	F-90.....	Ras Hamia, Triassic.....	4,453- 4,489	68023	(5)
21	..do.....	Facha.....	Gir, L 1-G, Eocene.....	3,076- 3,086	68040	-
22	..do.....	Farrud.....	Mabruk "A," Paleocene.....	3,245- 3,277	68038	(5)
23	..do.....	Haram.....	Tagrifet, Cretaceous.....	4,885- 4,889	68035	(5)
24	..do.....	Khuff.....	Anf, Cretaceous.....	5,534- 5,570	68029	(20)
25	..do.....	Nafoora.....	Amal, Tertiary.....	9,874	68137	(5)
26	..do.....	..do.....	Bahl, Tertiary.....	9,774- 9,996	68136	(5)
27	..do.....	..do.....	Nafoora, Upper Eocene.....	2,159- 2,273	68134	(5)
28	..do.....	..do.....	Najah, Paleocene.....	5,421	68132	(5)
29	..do.....	..do.....	Tagrifet, Cretaceous.....	8,496- 8,688	68135	(5)
30	..do.....	..do.....	Tamet, Upper Eocene.....	2,257	68131	(5)
31	..do.....	..do.....	..do.....	3,049	68133	(5)
32	..do.....	Ora.....	Lidam, Cretaceous.....	8,948- 8,960	68039	(5)
33	..do.....	Sarir.....	Cretaceous.....	N.A.	68055	(5)
34	..do.....	..do.....	..do.....	7,746- 8,092	68053	(5)
35	..do.....	..do.....	..do.....	8,030- 8,296	68054	(5)
36	..do.....	Umm Farud.....	Bucharma 'B' and Dahra 'B', Paleocene.	2,700- 3,113	68024	(5)
37	Morocco.....	Bled Khatar.....	Liassic, Jurassic.....	N.A.	57033	(19)
38	Nigeria.....	Delta.....	Miocene.....	5,642- 5,841	68062	(53)
39	..do.....	Kanuskiri.....	..do.....	6,027- 6,030	68043	-
40	..do.....	..do.....	..do.....	5,819- 5,857	68044	-
41	..do.....	Ke.....	..do.....	10,370-10,570	68064	(53)
42	..do.....	Meji.....	..do.....	9,049- 9,980	68068	(53)
43	..do.....	Meren.....	..do.....	N.A.	68065	(53)
44	..do.....	Meta.....	..do.....	N.A.	68067	-
45	..do.....	Obagi.....	..do.....	6,850- 8,750	68061	(10)
46	..do.....	Robertkiri.....	..do.....	11,540-11,720	68066	(53)
47	..do.....	Tubu.....	..do.....	7,660- 7,740	68063	(53)
Asia (Far East):						
48	Borneo.....	Seria.....	Tertiary.....	N.A.	50101	(57)
49	Sumatra.....	Bekasap.....	N.A.	N.A.	70013	-
50	..do.....	Duri.....	Tertiary.....	N.A.	69074	-
51	..do.....	Minas.....	Telisa, Miocene.....	N.A.	56102	(57)
52	..do.....	..do.....	..do.....	N.A.	70004	-
53	..do.....	Pematang.....	N.A.	N.A.	70014	-
54	Thailand.....	Ampur Fang.....	N.A.	759- 775	53070	-
Asia (Middle East):						
55	Abu Dhabi.....	Bu Hasa I.....	N.A.	N.A.	70008	-
56	..do.....	Bu Hasa II.....	N.A.	N.A.	70009	(37)
57	..do.....	Habshan.....	N.A.	N.A.	70010	-
58	..do.....	Murban-Bab-Bu Hasa.....	Cretaceous.....	N.A.	70007	-

N.A.--Not available.

TABLE 1. - Geographic and geologic origin of samples--Continued

Item	Continent and country	Field	Producing formation	Depth, feet	Sample	Reference
	Asia (Middle East) (continued):					
59	Bahrain.....	Bahrain.....	Cretaceous and Jurassic.....	N.A.	47049	-
60	Iran.....	Agha Jari.....	Asmari, Oligocene-Lower Miocene.	4,500	49014	-
61	...do.....	...do.....	...do.....	N.A.	55086	-
62	...do.....	Cyrus.....	Jurassic.....	N.A.	69086	(24)
63	...do.....	Darius.....	Cretaceous.....	N.A.	69085	(23)
64	...do.....	Gach Saran.....	Asmari, Lower Miocene.....	4,268	70113	-
65	...do.....	Sassan.....	Upper and Lower Arab, Clastic, Jurassic.	N.A.	69080	-
66	Kuwait.....	Burgan.....	Cretaceous and Jurassic.....	N.A.	55001	(16)
67	...do.....	...do.....	...do.....	N.A.	59200	(16)
68	...do.....	Khafji.....	...do.....	N.A.	69068	-
69	...do.....	Magwa-Ahmadi.....	Burgan, Third Sand, Cretaceous..	4,500- 4,750	69108	-
70	...do.....	Minagish.....	Minagish, Cretaceous.....	9,500- 9,800	69111	-
71	...do.....	Raudhatain.....	Burgan, Zubair and Ratawi, Cretaceous.	8,000-10,000	69109	-
72	...do.....	Sabiriyah.....	Burgan, Cretaceous.....	8,000- 8,200	69110	-
73	Neutral Zone.....	Wafra.....	Ratawi, Cretaceous.....	N.A.	67065	-
74	Qatar.....	Idd-el-Shargi.....	Cretaceous.....	N.A.	70003	(69)
75	...do.....	Maydan-Mahzan.....	Jurassic.....	N.A.	70002	(69)
76	Saudi Arabia.....	Abqaiq.....	Arab C, Clastic, Jurassic.....	N.A.	57010	(22)
77	...do.....	...do.....	...do.....	N.A.	70063	-
78	...do.....	Abu Sa'Fah	N.A.	N.A.	70067	-
79	...do.....	Berri.....	N.A.	N.A.	70070	-
80	...do.....	Fadhili.....	Jurassic.....	N.A.	70064	(36)
81	...do.....	Ghawar ('Ain Dar)....	Arab D, Clastic, Jurassic.....	5,900- 6,200	53072	(22)
82	...do.....	...do.....	...do.....	N.A.	57007	(22)
83	...do.....	Ghawar (Haradh).....	...do.....	N.A.	57005	(22)
84	...do.....	Ghawar (Huiya).....	...do.....	N.A.	57012	(22)
85	...do.....	Ghawar (Shedgum).....	...do.....	N.A.	57009	(22)
86	...do.....	Ghawar ('Uthmaniyah)...	...do.....	5,900- 6,200	53066	(22)
87	...do.....	...do.....	...do.....	N.A.	57013	(22)
88	...do.....	Ghawar.....	...do.....	N.A.	70062	-
89	...do.....	Kharsaniya.....	Arab A, Clastic, Jurassic.....	N.A.	57001	(22)
90	...do.....	...do.....	Arab B, Clastic, Jurassic.....	N.A.	57002	(22)
91	...do.....	...do.....	Arab C, Clastic, Jurassic.....	N.A.	57003	(22)
92	...do.....	...do.....	Arab D, Clastic, Jurassic.....	N.A.	57006	(22)
93	...do.....	Khurais.....	N.A.	N.A.	70068	-
94	...do.....	Manifa.....	N.A.	N.A.	70069	-
95	...do.....	Qatif.....	Arab C, Clastic, Jurassic.....	N.A.	57018	(22)
96	...do.....	Safaniya.....	Bahrain, Cretaceous.....	N.A.	57004	(22)
97	...do.....	...do.....	Cretaceous.....	N.A.	57011	(22)
98	...do.....	...do.....	...do.....	N.A.	67066	(22)
99	Australia.....	Alton.....	Evergreen, Lower Jurassic.....	6,060- 6,121	65072	(1)
100	...do.....	Barrow Island.....	Jurassic.....	6,740- 6,759	65073	(1, 35)
101	...do.....	Cabawin.....	Kianga, Upper Permian.....	10,140-10,153	65068	-
102	...do.....	Conloi.....	Evergreen, Lower Jurassic.....	4,314- 4,320	65069	(35)
103	...do.....	Halibut.....	La Troube, Eocene-Paleocene.....	7,650	71050	-
104	...do.....	Kingfish.....	...do.....	7,500	71049	-
105	...do.....	Lakes Entrance.....	Oligocene.....	N.A.	51083	(1, 67)
106	...do.....	Moonie.....	Precipice, Lower Jurassic.....	5,795- 5,851	65070	(1)
107	...do.....	...do.....	...do.....	5,641- 5,675	65071	(1)
	Caribbean:					
108	Cuba.....	Bacuranao-Cruz Verde.	Cuban Serpentine, Cretaceous....	1,200- 2,500	57025	-
109	...do.....	...do.....	...do.....	1,200- 2,500	57026	-
110	...do.....	Dos Estrellas (Jatibonico).	Upper Cretaceous.....	1,123	59240	-
111	...do.....	...do.....	Jiquima, Upper Cretaceous.....	1,072- 1,087	55081	-
112	...do.....	...do.....	...do.....	1,286- 1,301	55082	-
113	...do.....	Santa Maria del Mar..	Cuban Serpentine, Cretaceous....	2,000- 6,000	57022	-
114	...do.....	...do.....	...do.....	2,000- 6,000	57023	-
115	...do.....	...do.....	...do.....	2,000- 6,000	57029	-

N.A.--Not available.

TABLE 1. - Geographic and geologic origin of samples--Continued

Item	Continent and country	Field	Producing formation	Depth, feet	Sample	Reference
Europe:						
116	France.....	Lacq (Superior).....	Upper Cretaceous.....	N.A.	53062	(34)
117	Germany.....	Dalum (Lingen).....	Lower Cretaceous.....	N.A.	52007	(34)
118	...do.....	Georgsdorf.....	...do.....	N.A.	52008	(34)
119	...do.....	Nienhagen-Hanigsen...	...do.....	N.A.	52006	(34)
120	...do.....	Suderbruch.....	Jurassic.....	N.A.	52005	(34)
121	Netherlands.....	Ijsselmonde.....	Barremian, Lower Cretaceous.....	3,100	58037	-
122	...do.....	Schoonebeek.....	Valanginian, Lower Cretaceous...	2,500	58036	-
123	Yugoslavia.....	Lendava.....	Pliocene-Miocene.....	5,300	52048	(2, 66)
North America:						
124	Canada.....	Coleville.....	Lower Cretaceous.....	2,680- 2,740	52012	(7)
125	...do.....	Excelsior.....	D-2, Upper Devonian.....	N.A.	51067	(15)
126	...do.....	Fenn-Big Valley.....	D-2, Devonian.....	2,514- 2,547	51029	(15)
127	...do.....	...do.....	...do.....	5,235- 5,435	52037	(15)
128	...do.....	...do.....	...do.....	2,581- 2,694	51030	(15)
129	...do.....	Fosterton-Dollard...	Cretaceous-Jurassic.....	N.A.	67057	-
130	...do.....	Golden Spike.....	D-3, Devonian.....	N.A.	51086	(15)
131	...do.....	...do.....	...do.....	6,300- 6,400	52038	(15)
132	...do.....	Swan Hills, S.....	Beaverhill Lake, Devonian.....	8,444- 8,791	71078	-
133	...do.....	Wizard Lake.....	D-3, Devonian.....	6,847	51085	-
South America:						
134	Argentina.....	Cerro Dragon-Canadon Grande.	Cretaceous.....	4,260- 6,100	70061	-
135	Colombia.....	Payoa.....	La Paz, Eocene.....	7,000-11,000	70012	-
136	...do.....	Velasquez.....	Guaduas F, Eocene.....	7,067- 7,097	49044	(68)
137	Ecuador.....	Composite.....	N.A.	N.A.	71074	-
138	Venezuela.....	Amana.....	Eocene.....	N.A.	52029	-
139	...do.....	Bachaquero.....	Miocene.....	N.A.	57123	-
140	...do.....	...do.....	...do.....	N.A.	70025	-
141	...do.....	Boscan.....	Eocene-Oligocene.....	N.A.	71024	(64)
142	...do.....	Cabimas.....	Miocene.....	N.A.	67069	(12)
143	...do.....	Chimire.....	Miocene and Oligocene.....	N.A.	70023	(64)
144	...do.....	Dacion.....	N.A.	N.A.	70001	-
145	...do.....	Guara.....	Miocene and Oligocene.....	N.A.	69104	(64)
146	...do.....	...do.....	...do.....	N.A.	69105	-
147	...do.....	La Ceibita.....	N.A.	N.A.	69106	-
148	...do.....	Lagunillas.....	Miocene.....	N.A.	57124	(4, 40)
149	...do.....	Lama.....	N.A.	N.A.	70029	(56)
150	...do.....	Mara.....	Cretaceous.....	N.A.	70021	-
151	...do.....	...do.....	...do.....	N.A.	70028	-
152	...do.....	Mata.....	Oficina, Miocene-Oligocene and Merecure, Oligocene.	9,000-12,000	69087	-
153	...do.....	...do.....	...do.....	N.A.	70066	-
154	...do.....	Merey.....	...do.....	N.A.	70015	(64)
155	...do.....	Oficina.....	Miocene and Oligocene.....	N.A.	52026	(64)
156	...do.....	...do.....	...do.....	N.A.	52027	(64)
157	...do.....	...do.....	...do.....	N.A.	52028	(64)
158	...do.....	...do.....	...do.....	N.A.	52031	(64)
159	...do.....	...do.....	...do.....	N.A.	52032	(64)
160	...do.....	Pilon.....	...do.....	N.A.	70016	-
161	...do.....	Quiriquire.....	Pliocene.....	N.A.	70022	(64)
162	...do.....	San Joaquin.....	Miocene and Oligocene.....	N.A.	52030	(13)
163	...do.....	Santa Rosa.....	N.A.	N.A.	70026	-
164	...do.....	Silvestre.....	Eocene.....	N.A.	69103	(64)
165	...do.....	Sinco.....	N.A.	N.A.	69102	-
166	...do.....	Tia Juana.....	Miocene.....	N.A.	57125	(4)
167	...do.....	...do.....	...do.....	N.A.	68073	(4)
168	...do.....	...do.....	...do.....	N.A.	70024	(4)
169	...do.....	Zapatos.....	N.A.	N.A.	70030	-

N.A.--Not available.

TABLE 2. - Source of samples

Item	Company and concession or block number (where available)	Well number or sample type	Sample
1	Unknown.....	Unknown.....	71042
2	...do.....	...do.....	71041
3	Marathon Oil Company.....	Composite.....	67056
4	Unknown.....	Unknown.....	71043
5	...do.....	...do.....	71044
6	...do.....	...do.....	71045
7	Mobil Oil Egypt (S.A.).....	Composite.....	50088
8	Phillips Petroleum Company.....	Unknown.....	70011
9	American International Oil Company.....	Composite.....	69069
10	Nasr Oil Fields Company.....	...do.....	50089
11	Societe des Petroles d'Afrique Equatoriale Francaise.	Pipeline composite	68052
12	Shell Gabon.....	...do.....	68046
13	Societe des Petroles d'Afrique Equatoriale Francaise.	...do.....	68049
14	...do.....	...do.....	68050
15	...do.....	Unknown.....	68047
16	...do.....	Pipeline composite	68048
17	Marathon Oil Company.....	F2-32.....	67062
18	Mobil Oil Libya, Ltd. (11).....	GG1-11 (Ed Dib XF)	68036
19	...do.....	GG2-11.....	68037
20	Phillips Petroleum Company (90).....	F-1.....	68023
21	Mobile Oil Libya, Ltd. (11).....	L1-11.....	68040
22	...do.....	JJ1-11 (Hofra XB).	68038
23	American Overseas Petroleum Co., Ltd. (47).....	S-3-47.....	68035
24	Pan American Libya Oil Company (93).....	B2.....	68029
25	American Overseas Petroleum Co., Ltd. (51).....	G49-51.....	68137
26	...do.....	G46-51.....	68136
27	...do.....	G32-51.....	68134
28	...do.....	G-8-51.....	68132
29	...do.....	G42-51.....	68135
30	...do.....	G1-51.....	68131
31	...do.....	G15-51.....	68133
32	Mobil Oil Libya, Ltd. (13).....	01-13.....	68039
33	The British Petroleum Co., Ltd. (65).....	Terminal blend....	68055
34	...do.....	'C' structure blend	68053
35	...do.....	'L' structure blend	68054
36	Phillips Petroleum Company (92).....	Composite.....	68024
37	Unknown.....	Unknown.....	57033
38	Nigerian Gulf Oil Company (OPL-36A).....	3.....	68062
39	Tennessee Nigeria, Inc. (OPL-33C).....	20.....	68043
40	...do.....	20.....	68044
41	Nigerian Gulf Oil Company (OPL-32C).....	Ke-1.....	68064
42	Nigerian Gulf Oil Company (OPL-'D').....	Meji-1.....	68068
43	Nigerian Gulf Oil Company (OPL-'C').....	8.....	68065

TABLE 2. - Source of samples--Continued

Item	Company and concession or block number (where available)	Well number or sample type	Sample
44	Nigerian Gulf Oil Company (OPL-'C').....	Meta-1.....	68067
45	Societe Anonyme Francaise de Recherches et d'Exploitation de Petrole (OPL-35C).....	Unknown.....	68061
46	Nigerian Gulf Oil Company (OPL-32C).....	1.....	68066
47	Nigerian Gulf Oil Company (OPL-29C).....	1.....	68063
48	Unknown.....	Unknown.....	50101
49	California Texas Oil Corporation.....	...do.....	70013
50	...do.....	...do.....	69074
51	Pacific Petroleum, Ltd.....	...do.....	56102
52	California Texas Oil Corporation.....	...do.....	70004
53	...do.....	...do.....	70014
54	Unknown.....	...do.....	53070
55	Esso International, Inc.....	...do.....	70008
56	...do.....	...do.....	70009
57	...do.....	...do.....	70010
58	...do.....	...do.....	70007
59	Texaco, Incorporated.....	Composite.....	47049
60	Oil Well Engineering Company, Ltd.....	...do.....	49014
61	Unknown.....	Unknown.....	55086
62	Iran Pan American Oil Company.....	...do.....	69086
63	...do.....	...do.....	69085
64	California Texas Oil Corporation.....	...do.....	70113
65	Lavan Petroleum Company.....	...do.....	69080
66	Gulf Oil Corporation.....	...do.....	55001
67	Standard Oil Company (New Jersey).....	...do.....	59200
68	Arabian Oil Company Ltd. (Japan).....	...do.....	69068
69	Kuwait Oil Co., Ltd.....	...do.....	69108
70	...do.....	...do.....	69111
71	...do.....	...do.....	69109
72	...do.....	...do.....	69110
73	Marathon Oil Company.....	...do.....	67065
74	Bataafse Internationale Petroleum Naatschappij N. V..	...do.....	70003
75	...do.....	...do.....	70002
76	Arabian American Oil Company.....	12.....	57010
77	...do.....	Unknown.....	70063
78	...do.....	...do.....	70067
79	...do.....	...do.....	70070
80	...do.....	...do.....	70064
81	...do.....	Composite.....	53072
82	...do.....	GOSP-3.....	57007
83	...do.....	8.....	57005
84	...do.....	1.....	57012
85	...do.....	GOSP-1.....	57009

TABLE 2. - Source of samples--Continued

Item	Company and concession or block number (where available)	Well number or sample type	Sample
86	Arabian American Oil Company.....	Composite.....	53066
87	...do.....	GOSP-1 and 2.....	57013
88	...do.....	Unknown.....	70062
89	...do.....	1.....	57001
90	...do.....	1.....	57002
91	...do.....	1.....	57003
92	...do.....	1.....	57006
93	...do.....	Unknown.....	70068
94	...do.....	...do.....	70069
95	...do.....	12C.....	57018
96	...do.....	2.....	57004
97	...do.....	17.....	57011
98	Marathon Oil Company.....	Composite.....	67066
99	Union Oil Development Corporation.....	1.....	65072
100	Western Australia Petroleum Pty., Ltd.....	1.....	65073
101	Union Oil Development Corporation.....	2.....	65068
102	...do.....	1.....	65069
103	Esso Production Research Company.....	Composite.....	71050
104	...do.....	...do.....	71049
105	Lakes Oil Limited.....	Unknown.....	51083
106	Union Oil Development Corporation.....	2 lower.....	65070
107	...do.....	2 upper.....	65071
108	Morro Castle Petroleum Company.....	Raul Zarraga 5....	57025
109	Petroleo Cruz Verde, S.A.....	Cruz Verde 1.....	57026
110	Cuban Independent Oil Company.....	Composite.....	59240
111	Kerr-McGee Oil Industries, Inc.....	1.....	55081
112	...do.....	2.....	55082
113	Cuban Kewanee Oil Company.....	Jones 5.....	57022
114	...do.....	Jones 2.....	57023
115	...do.....	Jones 1.....	57029
116	Unknown.....	Unknown.....	53062
117	...do.....	...do.....	52007
118	...do.....	...do.....	52008
119	...do.....	...do.....	52006
120	...do.....	...do.....	52005
121	Shell Oil Company.....	...do.....	58037
122	...do.....	...do.....	58036
123	Unknown.....	...do.....	52048
124	Royalite Oil Company.....	...do.....	52012
125	Imperial Oil Limited.....	Composite.....	51067
126	Unknown.....	Unknown.....	51029
127	Gulf Oil Corporation.....	...do.....	52037

TABLE 2. - Source of samples--Continued

Item	Company and concession or block number (where available)	Well number or sample type	Sample
128	Unknown.....	Unknown.....	51030
129	Marathon Oil Company.....	Composite.....	67057
130	Imperial Oil Limited.....	...do.....	51086
131	Phillips Petroleum Company.....	Unknown.....	52038
132	Amoco Canada Petroleum Company, Ltd.....	169.....	71078
133	Texaco Exploration Company.....	B-3.....	51085
134	Pan American Argentina Oil Company.....	Unknown.....	70061
135	Colombia-Cities Service Petroleum Corporation.....	...do.....	70012
136	Texas Petroleum Company.....	...do.....	49044
137	Hunt Oil Company.....	1.....	71074
138	Mene Grande Oil Company.....	Unknown.....	52029
139	Standard Oil Company.....	...do.....	57123
140	Creole Petroleum Corporation.....	...do.....	70025
141	Unknown.....	...do.....	71024
142	Marathon Oil Company.....	Composite.....	67069
143	Creole Petroleum Corporation.....	Unknown.....	70023
144	Mobil Oil Co. de Venezuela.....	...do.....	70001
145	...do.....	...do.....	69104
146	...do.....	...do.....	69105
147	...do.....	...do.....	69106
148	Standard Oil Company (New Jersey).....	...do.....	57124
149	Mene Grande Oil Company.....	...do.....	70029
150	Creole Petroleum Corporation.....	...do.....	70021
151	Mene Grande Oil Company.....	...do.....	70028
152	Texas Petroleum Company.....	...do.....	69087
153	...do.....	...do.....	70066
154	Creole Petroleum Corporation.....	...do.....	70015
155	Mene Grande Oil Company.....	Composite.....	52026
156	...do.....	...do.....	52027
157	...do.....	...do.....	52028
158	...do.....	...do.....	52031
159	...do.....	...do.....	52032
160	Creole Petroleum Corporation.....	Unknown.....	70016
161	...do.....	...do.....	70022
162	Mene Grande Oil Company.....	Composite.....	52030
163	...do.....	Unknown.....	70026
164	Mobil Oil Co. de Venezuela.....	...do.....	69103
165	...do.....	...do.....	69102
166	Standard Oil Company (New Jersey).....	...do.....	57125
167	Marathon Oil Company.....	Composite.....	68073
168	Creole Petroleum Corporation.....	Unknown.....	70024
169	Mene Grande Oil Company.....	...do.....	70030

TABLE 3. - General characteristics and analytical and computed data

Item	General characteristics					Correlation index		Characteristics of residuum		Sample
	Gravity, ° API	Color ¹	Sulfur, weight-percent	Viscosity (Saybolt), at 100° F, seconds	Carbon-residue (Conradson), weight-percent	Average of fractions 4-7	Average of fractions 13-15	Percent on gasoline-free basis	Specific gravity, 60°/60° F	
1	31.5	BB	0.10	69	1.2	38	38	39	0.922	71042
2	33.8	BB	.09	52	1.5	31	37	22	.922	71041
3	42.8	BB	.15	33	.9	22	41	25	.946	67056
4	36.6	BB	.14	45	1.5	20	38	34	.940	71043
5	36.8	BB	.12	45	1.5	18	38	36	.937	71044
6	40.6	BG	.06	40	.5	20	30	26	.914	71045
7	22.1	BB	2.05	410	9.8	13	41	53	1.010	50088
8	34.0	GB	.84	49	4.6	18	44	29	.993	70011
9	32.1	BB	1.67	60	3.8	23	41	48	.984	69069
10	22.6	BB	2.06	300	10.8	16	45	53	1.020	50089
11	38.4	GB	.44	39	1.4	23	35	41	.941	68052
12	29.7	BB	.18	130	2.9	21	29	48	.937	68046
13	30.6	BB	.50	131	2.4	10	34	44	.960	68049
14	25.5	BB	.86	304	4.3	22	46	59	.969	68050
15	31.3	BB	.55	78	4.0	20	40	55	.957	68047
16	31.7	BB	.80	63	3.2	24	41	49	.972	68048
17	36.0	BB	.29	40	2.0	23	40	29	.968	67062
18	34.2	GB	.78	46	2.7	26	42	39	.977	68036
19	37.8	GB	1.31	41	2.3	26	42	36	.982	68037
20	47.6	GB	.09	37	1.3	20	32	36	.927	68023
21	31.7	BB	1.04	56	2.7	23	42	39	.977	68040
22	40.4	GB	.39	35	1.7	24	40	31	.963	68038
23	23.8	BB	1.57	507	5.6	18	40	56	1.015	68035
24	37.0	GB	.27	44	2.1	25	37	38	.956	68029
25	33.8	BB	.09	121	2.4	16	21	48	.930	68137
26	33.6	BB	.13	122	2.9	16	23	50	.928	68136
27	34.4	BB	.94	51	3.0	19	40	40	.969	68134
28	39.2	GB	.49	42	2.0	17	34	36	.946	68132
29	33.4	BB	.14	122	3.2	15	23	50	.935	68135
30	30.6	BB	1.01	69	3.5	22	39	41	.968	68131
31	35.6	BB	1.04	46	2.7	20	40	37	.970	68133
32	33.8	BB	.18	54	2.2	22	35	36	.945	68039
33	37.0	BB	.15	62	2.9	19	26	41	.956	68055
34	35.6	BB	.18	60	2.8	18	22	44	.954	68053
35	38.6	BB	.16	45	2.1	21	30	38	.951	68054
36	43.6	GB	.13	35	.9	22	38	20	.955	68024
37	40.0	GB	.10	43	1.7	12	29	25	.947	57033
38	31.0	DG	.18	51	1.2	36	54	32	.958	68062
39	23.3	BG	.17	88	1.5	42	54	28	.989	68043
40	21.5	GB	.19	137	1.9	42	62	29	.998	68044
41	43.4	Green	.05	34	.1	25	35	19	.929	68064
42	37.0	BG	.15	35	1.0	31	42	28	.976	68068

¹Colors of crude oils in this table are designated as follows: Green, no abbreviation; dark green, DG; brownish black, BB; greenish black, GB; and brownish green, BG.

TABLE 3. - General characteristics and analytical and computed data--Continued

Item	General characteristics					Correlation index		Characteristics of residuum		Sample
	Gravity, ° API	Color ¹	Sulfur, weight-percent	Viscosity (Saybolt), at 100° F, seconds	Carbon-residue (Conradson), weight-percent	Average of fractions 4-7	Average of fractions 13-15	Percent on gasoline-free basis	Specific gravity, 60°/60° F	
43	39.4	DG	0.09	36	1.0	32	40	21	0.974	68065
44	31.7	Green	.86	533	.2	-	37	55	.896	68067
45	26.2	BG	.21	53	1.0	45	59	25	.970	68061
46	38.4	DG	.12	37	1.1	30	43	21	.976	68066
47	35.6	DG	.08	42	.9	33	35	19	.976	68063
48	36.8	BG	.10	35	.3	35	48	12	.990	50101
49	30.8	BB	.17	115	2.6	20	39	53	.924	70013
50	19.7	BB	.18	1,661	3.7	33	59	66	.968	69074
51	32.8	BB	.10	92	1.5	16	26	46	.952	56102
52	32.5	BB	.13	82	2.9	17	27	49	.933	70004
53	30.2	BB	.10	179	3.5	24	29	63	.922	70014
54	16.4	BB	.28	7,622	8.6	-	61	73	.969	53070
55	38.8	BG	.74	37	1.5	21	38	33	.952	70008
56	37.8	BG	.77	39	1.5	21	38	31	.953	70009
57	40.9	BG	.71	39	1.3	22	41	26	.958	70010
58	39.2	BG	.62	37	1.4	21	40	29	.955	70007
59	35.2	GB	1.42	44	3.1	20	43	36	.970	47049
60	35.0	GB	1.39	39	3.8	24	45	38	.984	49014
61	34.6	BB	1.43	46	3.0	22	44	42	.979	55086
62	17.4	BB	3.68	2,369	6.2	24	49	62	1.039	69086
63	33.2	BB	2.44	47	4.6	22	45	43	.999	69085
64	29.3	BB	1.57	72	4.6	24	45	46	.999	70113
65	33.4	BB	2.06	47	4.2	22	50	39	.999	69080
66	31.5	BB	2.62	68	5.5	18	45	48	1.000	55001
67	31.0	BB	2.54	77	4.6	18	46	49	.999	59200
68	27.7	BB	2.99	82	4.8	17	48	52	1.017	69068
69	31.7	BB	2.21	59	5.1	19	45	47	1.001	69108
70	33.2	BB	2.12	52	3.9	18	46	39	1.008	69111
71	32.8	BB	2.13	51	4.6	18	45	44	.996	69109
72	32.1	BB	1.82	51	4.5	19	41	46	.986	69110
73	24.2	BB	3.91	186	6.9	19	48	58	1.027	67065
74	32.8	BB	1.99	42	3.8	22	50	55	.995	70003
75	38.2	BB	1.48	39	2.1	23	43	31	.976	70002
76	28.8	BB	2.76	77	4.3	18	47	51	1.018	57010
77	37.0	BG	1.30	40	2.6	19	47	29	.981	70063
78	28.6	BB	2.61	73	4.8	20	51	47	1.015	70067
79	30.2	BB	2.24	58	4.3	18	46	42	1.006	70070
80	36.8	BG	1.25	42	1.9	19	43	32	.959	70064
81	33.6	BB	1.66	49	3.8	18	42	41	.977	53072
82	34.4	GB	1.69	48	3.6	18	45	42	.984	57007
83	32.8	GB	2.14	52	2.5	19	47	44	.996	57005
84	32.3	GB	2.14	55	3.6	20	47	45	.995	57012
85	34.0	GB	1.85	51	2.6	17	45	41	.986	57009

¹Colors of crude oils in this table are designated as follows: Green, no abbreviation; dark green, DG; brownish black, BB; greenish black, GB; and brownish green, BG.

TABLE 3. - General characteristics and analytical and computed data--Continued

Item	General characteristics					Correlation index		Characteristics of residuum		Sample
	Gravity, ° API	Color ¹	Sulfur, weight-percent	Viscosity (Saybolt), at 100° F, seconds	Carbon-residue (Conradson), weight-percent	Average of fractions 4-7	Average of fractions 13-15	Percent on gasoline-free basis	Specific gravity, 60°/60° F	
86	33.8	BB	1.94	50	4.6	18	42	46	0.987	53066
87	33.2	GB	2.01	50	2.6	19	47	42	.994	57013
88	33.2	GB	1.71	51	3.6	17	49	39	.991	70062
89	32.1	GB	2.38	55	3.7	18	46	47	.989	57001
90	31.1	GB	2.49	59	4.4	19	46	47	.992	57002
91	31.3	GB	2.69	57	2.0	19	47	47	.993	57003
92	30.8	GB	2.54	63	3.7	19	49	46	1.007	57006
93	32.1	BB	1.73	56	3.9	17	44	48	.983	70068
94	29.8	BB	2.75	63	5.6	13	50	46	1.998	70069
95	29.1	BB	2.55	66	5.5	18	46	48	1.010	57018
96	27.7	GB	3.03	110	5.1	15	48	52	1.021	57004
97	31.9	GB	2.63	56	4.3	15	44	47	1.005	57011
98	26.8	BB	2.97	127	5.1	17	46	58	1.012	67066
99	50.4	Green	.02	34	.3	22	17	20	.905	65072
100	37.2	BG	.02	37	.2	30	33	14	.927	65073
101	47.2	Green	.05	35	.2	25	25	18	.911	65068
102	29.5	BG	.03	44	.2	33	56	12	.925	65069
103	41.7	BB	.16	36	.8	24	33	29	.932	71050
104	45.4	BB	.12	31	.2	24	35	16	.923	71049
105	16.0	BB	.44	450	3.9	-	75	31	1.004	51083
106	43.8	DG	.02	37	.3	21	25	20	.902	65070
107	49.7	Green	.02	34	.2	16	21	13	.910	65071
108	30.2	BB	.88	54	2.6	33	55	41	.999	57025
109	28.0	GB	.90	62	3.1	35	57	43	.989	57026
110	15.1	BB	1.79	1,150	3.5	-	73	45	1.018	59240
111	14.7	BG	1.83	1,270	6.2	-	76	46	1.020	55081
112	14.2	BG	1.97	1,850	6.3	-	75	49	1.022	55082
113	21.8	BB	2.48	230	3.8	29	58	50	.994	57022
114	15.0	BB	3.26	1,440	4.1	33	76	65	1.021	57023
115	25.0	GB	2.25	115	2.9	28	53	47	1.004	57029
116	21.8	BB	4.34	430	9.7	13	48	57	1.046	53062
117	29.7	BB	.79	210	3.8	20	29	57	.948	52007
118	24.3	BB	.94	2,340	7.6	21	46	72	.958	52008
119	29.3	GB	.87	92	4.1	14	42	46	.969	52006
120	31.5	GB	.71	71	3.8	17	39	43	.969	52005
121	19.2	BB	.53	780	2.8	36	56	62	.974	58037
122	24.0	BB	.96	1,200	3.0	24	38	72	.948	58036
123	35.6	Green	.14	38	.3	34	40	11	.939	52048
124	14.1	BB	3.38	3,450	11.0	30	69	60	1.032	52012
125	36.0	GB	.64	43	2.7	25	40	44	.964	51067
126	33.4	BB	1.09	52	3.9	29	42	44	.980	51029
127	30.4	GB	1.05	64	4.1	28	42	44	.981	52037

¹Colors of crude oils in this table are designated as follows: Green, no abbreviation; dark green, DG; brownish black, BB; greenish black, GB; and brownish green, BG.

TABLE 3. - General characteristics and analytical and computed data--Continued

Item	General characteristics					Correlation index		Characteristics of residuum		Sample
	Grav- ity, ° API	Color ¹	Sulfur, weight- percent	Viscosity (Saybolt), at 100° F, seconds	Carbon- residue (Conradson), weight- percent	Aver- age of frac- tions 4-7	Aver- age of frac- tions 13-15	Percent on gasoline- free basis	Specific gravity, 60°/60° F	
128	34.2	BB	0.71	49	2.9	30	39	42	0.967	51030
129	22.5	BB	2.90	187	4.1	22	54	54	1.023	67057
130	37.2	BB	.24	42	2.2	27	40	40	.957	51086
131	35.2	GB	.23	44	1.8	28	39	38	.961	52038
132	39.8	BG	.11	37	1.2	27	39	30	.948	71078
133	37.0	BB	.24	41	2.1	27	41	37	.958	51085
134	21.8	BB	.18	3,159	3.4	26	49	65	.969	70061
135	33.2	GB	.83	50	4.2	23	39	47	.968	70012
136	23.3	BB	1.03	250	6.3	24	49	46	.988	49044
137	27.5	BB	.77	89	3.5	25	41	49	.993	71074
138	31.9	DG	.69	55	2.6	28	43	40	.963	52029
139	14.7	BB	2.62	3,310	6.5	39	61	70	1.016	57123
140	15.1	BB	2.68	4,441	6.5	29	64	55	1.031	70025
141	11.3	BB	5.54	6,000	4.1	39	59	72	1.047	71024
142	22.1	BB	1.71	280	4.4	25	55	62	.990	67069
143	28.4	BB	1.07	57	5.2	30	48	41	.998	70023
144	24.2	BB	1.29	781	5.0	28	51	46	1.011	70001
145	18.2	BB	2.06	1,052	6.5	30	53	60	1.023	69104
146	22.3	BB	1.85	256	5.3	28	53	51	1.034	69105
147	39.2	BB	.41	35	1.4	28	45	32	.959	69106
148	18.2	BB	2.12	1,030	5.8	35	56	72	.998	57124
149	23.1	BB	1.47	142	4.0	27	53	50	.997	70029
150	28.9	BB	2.19	87	6.5	20	38	50	.987	70021
151	32.3	BG	.13	49	.1	41	40	26	.900	70028
152	21.3	BB	1.59	244	5.4	28	55	51	1.023	69087
153	31.5	BB	.60	46	3.1	30	52	39	.970	70066
154	13.2	BB	2.52	6,000	8.4	-	62	68	1.024	70015
155	30.4	BB	.80	54	5.5	28	48	42	.997	52026
156	36.4	BB	.48	45	2.9	30	41	31	.979	52027
157	33.4	BB	.59	48	3.7	30	42	34	.986	52028
158	38.2	GB	.31	37	1.5	32	39	23	.962	52031
159	30.2	BB	.77	54	4.9	30	39	39	.993	52032
160	13.9	BB	2.11	6,000	7.3	-	65	60	1.022	70016
161	15.9	BB	1.33	725	5.0	40	75	45	1.014	70022
162	42.1	Green	.14	36	.8	31	30	23	.954	52030
163	37.8	BG	.09	35	.02	35	32	11	.928	70026
164	26.1	BB	1.17	102	5.3	25	48	48	1.018	69103
165	23.5	BB	1.38	181	5.9	24	50	49	1.026	69102
166	27.0	BB	1.49	148	4.2	26	47	56	.986	57125
167	18.6	BB	2.07	786	5.8	28	58	61	1.001	68073
168	26.8	BB	1.54	104	5.1	25	48	50	.995	70024
169	28.9	GB	.48	56	1.6	34	43	41	.944	70030

¹Colors of crude oils in this table are designated as follows: Green, no abbreviation; dark green, DG; brownish black, BB; greenish black, GB; and brownish green, BG.

TABLE 4. - Hydrocarbon-type data

Item	Volume-percent of crude		Volume-percent of aromatics		Volume-percent of paraffin-naphthene		Hydrocarbon ring, weight-percent of paraffin-naphthene		Naphthene in naphtha, volume-percent	Paraffins in naphtha, volume-percent	Sample
	Naphtha	Gas oil	Naphtha	Gas oil	Naphtha	Gas oil	Naphtha	Gas oil			
1	16.7	28.5	7	15	93	85	58	44	85	8	71042
2	21.8	27.2	7	21	93	79	43	28	68	25	71041
3	43.9	27.7	11	24	89	76	12	21	20	69	67056
4	26.1	29.8	5	15	95	85	19	28	32	63	71043
5	27.1	29.3	8	20	92	80	13	23	20	72	71044
6	28.7	31.5	8	17	92	83	17	16	26	66	71045
7	8.2	23.8	1	8	99	92	17	28	28	71	50088
8	28.6	28.8	7	19	93	81	11	28	21	72	70011
9	25.6	21.9	11	23	89	77	12	25	21	68	69069
10	13.8	22.8	3	17	97	83	18	28	31	66	50089
11	32.7	28.2	12	23	88	77	16	16	25	63	68052
12	8.8	26.7	6	14	94	86	26	26	45	49	68046
13	12.6	30.4	6	15	94	85	3	18	9	85	68049
14	13.5	22.2	7	20	93	80	21	31	34	59	68050
15	21.7	24.2	11	17	89	83	12	24	21	68	68047
16	24.9	23.3	10	23	90	77	18	24	29	61	68048
17	29.6	32.9	11	21	89	79	23	24	35	54	67062
18	28.1	26.9	7	21	93	79	24	32	40	53	68036
19	34.2	26.0	8	22	92	78	20	25	34	58	68037
20	48.9	19.5	5	17	95	83	10	22	19	76	68023
21	21.8	26.1	6	20	94	80	22	32	37	57	68040
22	40.2	26.8	7	23	93	77	19	28	32	61	68038
23	12.8	21.3	4	13	96	87	19	25	34	62	68035
24	31.6	26.8	7	19	93	81	22	24	36	57	68029
25	16.0	23.8	7	9	93	91	12	18	20	73	68137
26	15.4	24.5	7	9	93	91	11	19	18	75	68136
27	24.7	26.5	4	14	96	86	18	33	32	64	68134
28	31.3	30.0	5	13	95	87	12	25	22	73	68132
29	15.1	23.2	7	9	93	91	10	18	17	76	68135
30	15.3	29.9	4	12	96	88	26	37	47	49	68131
31	28.2	27.1	5	14	95	86	16	33	29	66	68133
32	18.9	31.0	11	17	89	83	22	23	34	55	68039
33	24.9	25.1	7	13	93	87	12	17	22	71	68055
34	23.6	24.3	6	12	94	88	13	17	24	70	68053
35	29.4	25.4	7	15	93	85	16	20	27	66	68054
36	45.7	30.7	7	21	93	79	20	24	31	62	68024
37	27.1	35.9	1	7	99	93	13	24	23	76	57033
38	24.1	32.9	12	25	88	75	42	49	61	27	68062
39	2.9	41.8	3	18	97	82	66	57	97	-	68043
40	2.4	40.4	5	16	95	84	65	66	95	-	68044
41	40.6	38.6	15	22	85	78	17	23	24	61	68064
42	34.1	40.9	17	33	83	67	23	21	32	51	68068

TABLE 4. - Hydrocarbon-type data--Continued

Item	Volume-percent of crude		Volume-percent of aromatics		Volume-percent of paraffin-naphthene		Hydrocarbon ring, weight-percent of paraffin-naphthene		Naphthene in naphtha, volume-percent	Paraffins in naphtha, volume-percent	Sample
	Naphtha	Gas oil	Naphtha	Gas oil	Naphtha	Gas oil	Naphtha	Gas oil			
43	39.4	33.4	18	27	82	73	23	26	31	51	68065
44	2.6	23.8	20	24	80	76	-	4	-	80	68067
45	15.3	43.0	25	38	75	62	48	55	57	18	68061
46	32.3	33.5	13	24	87	76	26	28	38	49	68066
47	25.2	38.0	13	22	87	78	35	27	52	35	68063
48	37.1	41.1	17	40	83	60	33	25	44	39	50101
49	13.3	26.1	8	17	92	83	21	22	32	60	70013
50	4.5	18.0	11	33	89	67	47	49	73	16	69074
51	18.6	23.5	2	14	98	86	16	18	27	71	56102
52	15.4	26.2	7	17	93	83	15	16	23	70	70004
53	12.4	21.4	8	17	92	83	25	24	41	51	70014
54	-	-	-	-	-	-	-	-	-	-	53070
55	33.3	28.3	14	25	86	75	6	12	11	75	70008
56	32.0	8.8	13	25	87	75	9	4	15	72	70009
57	35.0	28.8	13	24	87	76	11	15	17	70	70010
58	34.3	27.7	13	24	87	76	9	15	16	71	70007
59	29.4	28.2	13	22	87	78	8	18	13	74	47049
60	30.5	24.8	12	25	88	75	14	21	23	65	49014
61	28.8	24.1	12	20	88	80	11	26	19	69	55086
62	12.1	17.1	11	25	89	75	17	30	29	60	69086
63	30.6	21.7	11	24	89	76	8	20	16	73	69085
64	24.7	23.8	11	25	89	75	19	24	30	59	70113
65	28.8	25.2	15	29	85	71	7	18	13	72	69080
66	25.5	22.4	9	22	91	78	5	21	11	80	55001
67	25.4	22.6	8	21	92	79	8	22	15	77	59200
68	22.7	21.0	10	23	90	77	3	23	7	83	69068
69	27.4	23.2	12	24	88	76	3	21	8	80	69108
70	27.2	22.8	13	25	87	75	2	15	6	81	69111
71	28.2	24.1	10	24	90	76	6	17	12	78	69109
72	27.0	24.1	12	22	88	78	7	17	11	77	69110
73	21.2	19.0	10	26	90	74	7	21	14	76	67065
74	28.4	26.9	14	29	86	71	7	16	14	72	70003
75	35.6	26.8	14	27	86	73	9	15	15	71	70002
76	22.9	21.1	8	21	92	79	7	20	14	78	57010
77	30.3	27.2	16	23	84	77	2	19	4	80	70063
78	24.3	23.6	12	28	88	72	7	16	11	77	70067
79	24.9	25.6	14	25	86	75	3	15	6	80	70070
80	28.7	27.3	14	25	86	75	5	13	8	78	70064
81	27.8	25.4	10	22	90	78	6	18	12	78	53072
82	28.5	25.2	6	30	94	70	11	20	21	73	57007
83	28.1	23.0	8	24	92	76	10	21	18	74	57005
84	28.4	22.6	8	21	92	79	14	24	24	68	57012
85	28.0	25.9	9	22	91	78	6	19	12	79	57009

TABLE 4. - Hydrocarbon-type data--Continued

Item	Volume-percent of crude		Volume-percent of aromatics		Volume-percent of paraffin-naphthene		Hydrocarbon ring, weight-percent of paraffin-naphthene		Naphthene in naphtha, volume-percent	Paraffins in naphtha, volume-percent	Sample
	Naphtha	Gas oil	Naphtha	Gas oil	Naphtha	Gas oil	Naphtha	Gas oil			
86	27.4	23.0	10	24	90	76	5	16	11	79	53066
87	28.0	24.7	8	22	92	78	10	20	18	74	57013
88	27.1	26.1	10	25	90	75	6	18	10	80	70062
89	25.2	23.4	7	23	93	77	11	19	18	75	57001
90	25.8	23.3	8	22	92	78	11	23	19	73	57002
91	24.8	23.2	6	23	94	77	13	19	23	71	57003
92	25.8	23.4	8	24	92	76	9	17	17	75	57006
93	26.1	23.7	11	25	89	75	4	16	7	82	70068
94	21.8	25.7	6	26	94	74	4	17	8	85	70069
95	23.3	22.6	8	23	92	77	9	18	17	75	57018
96	22.2	22.3	4	21	96	79	9	23	18	78	57004
97	26.6	22.5	4	19	96	81	8	21	17	79	57011
98	22.3	19.6	9	24	91	76	5	21	11	80	67066
99	48.8	26.4	7	15	93	85	16	15	26	67	65072
100	20.1	43.0	20	27	80	73	25	27	35	45	65073
101	50.6	24.6	10	17	90	83	21	22	32	58	65068
102	12.8	56.3	6	18	94	82	53	68	93	1	65069
103	33.6	29.5	7	24	93	76	23	25	36	57	71050
104	42.2	29.4	7	21	93	79	20	24	33	60	71049
105	-	-	-	-	-	-	-	-	-	-	51083
106	41.0	31.2	4	14	96	86	24	27	40	56	65070
107	48.1	30.6	3	10	97	90	16	19	27	70	65071
108	30.9	24.6	9	22	91	78	39	52	58	33	57025
109	27.0	25.7	14	25	86	75	40	51	55	31	57026
110	-	-	-	-	-	-	-	-	-	-	59240
111	.6	30.7	2	11	98	89	67	89	67	31	55081
112	-	-	-	-	-	-	-	-	-	-	55082
113	11.6	24.4	10	25	90	75	32	44	51	39	57022
114	9.3	20.6	7	36	93	64	51	69	81	12	57023
115	18.4	25.6	15	23	85	77	25	35	36	49	57029
116	16.0	19.7	1	16	99	84	9	27	16	83	53062
117	15.2	20.8	13	19	87	81	6	14	11	76	52007
118	11.8	14.2	8	24	92	76	9	28	19	73	52008
119	17.8	25.4	7	20	93	80	15	25	27	66	52006
120	19.9	24.8	7	20	93	80	9	22	18	75	52005
121	2.9	21.1	6	27	94	73	49	58	86	8	58037
122	8.0	16.0	9	19	91	81	31	28	45	46	58036
123	26.0	46.5	25	35	75	65	31	23	41	34	52048
124	6.3	22.6	16	29	84	71	27	69	41	43	52012
125	31.3	26.5	7	20	93	80	22	29	37	56	51067
126	26.3	22.2	9	23	91	77	24	30	39	52	51029
127	25.5	24.4	10	23	90	77	26	28	40	50	52037

TABLE 4. - Hydrocarbon-type data--Continued

Item	Volume-percent of crude		Volume-percent of aromatics		Volume-percent of paraffin-naphthene		Hydrocarbon ring, weight-percent of paraffin-naphthene		Naphthene in naphtha, volume-percent	Paraffins in naphtha, volume-percent	Sample
	Naphtha	Gas oil	Naphtha	Gas oil	Naphtha	Gas oil	Naphtha	Gas oil			
128	27.1	23.2	8	21	92	79	29	30	43	49	51030
129	17.9	20.2	10	29	90	71	15	34	25	65	67057
130	31.0	23.9	8	24	92	76	21	27	35	57	51086
131	32.0	24.6	9	27	91	73	25	25	39	52	52038
132	36.1	28.3	11	21	89	79	23	28	35	54	71078
133	33.1	24.7	7	28	93	72	25	25	40	53	51085
134	8.4	18.9	3	14	97	86	34	49	56	41	70061
135	28.2	23.2	10	20	90	80	15	26	25	65	70012
136	10.5	27.5	10	19	90	81	24	40	40	50	49044
137	20.0	23.4	5	21	95	79	26	37	43	52	71074
138	24.5	26.2	15	24	85	76	19	31	30	55	52029
139	-	-	-	-	-	-	-	-	-	-	57123
140	5.0	17.4	9	25	91	75	32	59	54	37	70025
141	3.6	14.3	10	18	90	82	56	58	88	2	71024
142	13.9	20.4	11	28	89	72	21	39	34	55	67069
143	22.7	26.7	14	24	86	76	30	39	45	41	70023
144	15.8	24.9	12	24	88	76	26	43	39	49	70001
145	11.2	21.1	21	27	79	73	19	40	28	51	69104
146	17.8	22.4	16	25	84	75	17	39	27	57	69105
147	43.5	25.8	17	32	83	68	14	32	20	63	69106
148	10.2	17.3	8	24	92	76	38	50	59	33	57124
149	13.2	21.9	16	25	84	75	21	46	29	55	70029
150	20.7	21.1	12	20	88	80	10	20	17	71	70021
151	16.9	25.0	36	45	64	55	22	18	24	40	70028
152	14.3	21.9	15	26	85	74	19	48	32	53	69087
153	24.3	29.6	20	30	80	70	17	39	24	56	70066
154	1.9	19.9	16	25	84	75	3	58	0	84	70015
155	28.3	24.2	14	24	86	76	16	34	26	60	52026
156	35.7	29.0	17	27	83	73	18	28	28	55	52027
157	31.6	28.5	16	27	84	73	18	32	29	55	52028
158	35.4	33.1	20	28	80	72	18	28	26	54	52031
159	25.2	26.8	15	27	85	73	20	32	31	54	52032
160	1.9	21.9	12	23	88	77	39	66	67	21	70016
161	2.8	27.8	2	21	98	79	62	74	98	0	70022
162	42.3	26.3	14	29	86	71	22	19	32	54	52030
163	34.0	40.1	20	34	80	66	36	21	48	32	70026
164	21.8	24.1	8	27	92	73	23	29	37	55	69103
165	16.8	20.7	8	25	92	75	24	33	39	53	69102
166	16.7	20.3	11	24	89	76	25	32	38	51	57125
167	6.5	19.9	12	26	88	74	31	44	49	39	68073
168	19.2	20.6	14	23	86	77	14	35	24	62	70024
169	17.6	24.9	30	31	70	69	13	33	18	52	70030

TABLE 5. - Production of foreign oilfields

Item	Continent and country	Field	Year of discovery	Production, 1,000 barrels per year ¹								
				1962	1963	1964	1965	1966	1967	1968	1969	1970
Africa:												
1-2	Algeria.....	Edjeleh.....	1959	12,059	13,679	13,937	13,033	13,311	12,787	12,567	10,887	10,950
3	...do.....	Hassi Messaoud.....	1956	69,245	77,338	94,829	94,207	107,587	118,476	109,653	172,239	144,185
4-5	...do.....	Tin Fouye.....	1960-1968	-	1,715	8,745	9,502	11,368	14,077	16,078	-	19,893
6	...do.....	Zarzaitaine.....	1958	44,592	46,050	48,333	48,372	34,058	26,698	31,868	31,687	34,128
7	Egypt.....	Asl.....	1948	1,050	870	609	894	88	619	-	-	-
8	...do.....	El Alamein.....	1966	-	-	-	-	-	-	-	8,660	13,990
9	...do.....	El Morgan.....	1965	-	-	-	-	-	4,050	35,390	62,262	82,639
10	...do.....	Sudr.....	1946	951	887	1,048	930	821	783	-	-	-
11	Gabon.....	Batanga.....	1960	545	674	689	752	797	785	777	640	621
12	...do.....	Gamba.....	1963	-	-	-	-	-	-	22,533	15,059	13,403
13	...do.....	Lopez, Cap.....	1958	709	1,050	1,267	702	1,086	381	774	593	548
14	...do.....	Lopez, Nord.....	1962	-	-	-	1,785	1,575	1,954	1,016	999	949
15	...do.....	Pointe Clairette.....	1956	1,151	1,347	1,485	1,968	2,355	2,448	2,166	1,495	1,460
16	...do.....	Tchenque.....	1959	1,626	1,430	1,544	1,905	1,853	1,821	1,674	1,505	1,460
17	Libya.....	Dahra.....	1959	-	40,571	22,942	67,691	46,063	39,059	36,207	24,012	27,046
18-19	...do.....	Ed Dib.....	1970	-	-	-	-	-	-	-	-	450
20	...do.....	F-90.....	1964	-	-	-	-	-	-	-	-	-
21	...do.....	Facha.....	1963	-	-	-	-	-	-	-	-	-
22	...do.....	Farrud.....	1964	-	-	-	-	2,751	2,678	2,464	2,009	1,775
23	...do.....	Haram.....	1964	-	-	-	-	-	-	-	-	-
24	...do.....	Khuff.....	1964	-	-	-	-	-	2,306	943	188	67
25-31	...do.....	Nafuora.....	1965	-	-	-	-	-	-	51,743	169,705	121,237
32	...do.....	Ora.....	1962	-	-	-	-	16,253	11,023	7,977	5,938	5,431
33-35	...do.....	Sarir.....	1961	-	-	-	-	-	-	103,523	112,912	133,971
36	...do.....	Umm Farud.....	1962	-	-	-	-	-	2,016	2,406	2,500	1,963
37	Morocco.....	Bled Khatara.....	1954	687	2	-	-	-	-	-	-	-
38	Nigeria.....	Delta.....	1965	-	-	-	-	-	-	2,345	4,695	7,556
39-40	...do.....	Kanuskiri.....	1965	-	-	-	-	-	-	-	-	-
41	...do.....	Ke.....	1965	-	-	-	-	-	-	-	-	-
42	...do.....	Meji.....	1965	-	-	-	-	-	-	-	3,194	8,400
43	...do.....	Meren.....	1965	-	-	-	-	-	-	-	12,977	19,919
44	...do.....	Meta.....	1965	-	-	-	-	-	-	-	-	-
45	...do.....	Obagi.....	1964	-	-	-	-	-	-	-	-	-
46	...do.....	Robertkiri.....	1964	-	-	-	-	-	-	-	-	-
47	...do.....	Tubu.....	1964	-	-	-	-	-	-	-	-	-
Asia (Far East):												
48	Borneo.....	Seria.....	1929	29,376	25,452	26,245	24,565	24,519	22,527	30,530	21,273	19,513
49	Sumatra.....	Bekasap.....	1955	-	-	-	-	-	-	24,654	36,500	41,425
50	...do.....	Duri.....	1941	17,537	19,680	22,169	22,203	8,978	26,091	15,843	15,139	15,542
51-52	...do.....	Minas.....	1944	65,118	64,047	69,959	83,306	80,015	96,937	96,056	116,800	138,113
53	...do.....	Pematang.....	1959	-	-	-	-	-	-	2,570	16,060	16,940
54	Thailand.....	Ampur Fang.....	-	-	-	-	-	-	-	-	-	-

¹Canadian production from (25-31). All other production from (42-52).

TABLE 5. - Production of foreign oilfields--Continued

Item	Continent and country	Field	Year of discovery	Production, 1,000 barrels per year ¹								
				1962	1963	1964	1965	1966	1967	1968	1969	1970
	Asia (Middle East):											
55	Abu Dhabi.....	Bu Hasa I.....	-	-	-	-	-	-	-	-	-	-
56	...do.....	Bu Hasa II.....	-	-	-	-	-	-	-	-	-	-
57	...do.....	Habshan.....	-	-	-	-	-	-	-	-	-	-
58	...do.....	Murban-Bab-Bu Hasa.....	1960	-	-	-	-	84,443	89,135	114,004	125,590	134,996
59	Bahrain.....	Bahrain.....	1932	-	-	-	-	21,703	15,303	27,291	-	-
60-61	Iran.....	Agha Jari.....	1937	152,420	410,980	290,600	306,158	447,821	156,121	332,017	313,105	315,459
62	...do.....	Cyrus.....	1962	-	-	-	-	-	1,580	3,670	2,887	4,429
63	...do.....	Darius.....	1961	-	-	110	5,971	23,339	28,716	37,752	29,275	34,133
64	...do.....	Gach Saran.....	1928	82,786	124,214	147,700	173,184	307,262	149,554	219,540	232,417	292,090
65	...do.....	Sassan.....	1966	-	-	-	-	-	-	-	26,597	43,403
66-67	Kuwait.....	Burgan.....	1938	-	-	-	-	-	-	-	-	-
68	...do.....	Khafji.....	-	-	-	-	-	-	-	-	-	-
69	...do.....	Magwa-Ahmadi.....	1952	-	-	-	-	-	-	-	-	-
70	...do.....	Minagish.....	1959	-	-	-	-	-	-	-	-	-
71	...do.....	Raudhatain.....	1955	-	-	-	-	-	-	-	-	-
72	...do.....	Sabiriyah.....	1957	-	-	-	-	-	-	-	-	-
73	Neutral Zone.....	Wafra.....	1955	17,013	19,857	18,848	22,628	21,091	21,741	20,613	30,713	32,108
74	Qatar.....	Idd-el-Shargi.....	1960	-	-	4,104	10,115	12,015	13,552	15,078	14,045	15,236
75	...do.....	Maydan-Mahzan.....	1963	-	-	-	-	12,504	24,121	40,610	40,240	44,415
76-77	Saudi Arabia.....	Abqaiq.....	1941	125,861	138,844	135,767	144,509	166,848	178,777	194,255	200,721	266,275
78	...do.....	Abu Sa'Fah.....	1963	-	-	-	-	4,917	15,384	15,943	24,162	25,651
79	...do.....	Berri.....	1964	-	-	-	-	-	4,421	6,764	9,791	8,357
80	...do.....	Fadhili.....	1949	-	-	4,181	7,668	9,434	12,571	16,900	15,272	13,235
81-88	...do.....	Ghawar.....	1948	246,497	278,634	268,738	303,507	327,533	395,954	520,662	536,133	553,845
89-92	...do.....	Kharsaniya.....	1956	30,205	26,009	26,574	48,749	46,833	96,069	-	18,902	32,219
93	...do.....	Khurais.....	1957	-	6	210	224	299	480	584	2,340	8,540
94	...do.....	Manifa.....	1957	-	-	-	4	10,349	17,260	19,864	13,375	14,994
95	...do.....	Qatif.....	1945	8,488	10,093	9,464	12,543	17,374	25,724	20,405	23,901	33,726
96-98	...do.....	Safaniya.....	1951	100,349	107,271	127,767	156,824	195,537	188,892	134,144	152,613	213,173
99	Australia.....	Alton.....	1964	-	-	-	-	125	286	279	274	214
100	...do.....	Barrow Island.....	1964	-	-	-	-	-	375	9,251	12,034	19,762
101	...do.....	Cabawin.....	1961	-	-	-	-	-	-	-	-	-
102	...do.....	Conloi.....	1964	-	-	-	-	-	5	-	-	-
103	...do.....	Halibut.....	1967	-	-	-	-	-	-	-	-	11,750
104	...do.....	Kingfish.....	1967	-	-	-	-	-	-	-	-	-
105	...do.....	Lakes Entrance.....	1924	-	-	-	-	-	-	-	-	-
106-107	...do.....	Moonie.....	1961	-	-	586	2,103	3,035	2,639	2,858	2,128	1,343
	Caribbean:											
108-109	Cuba.....	Bacuranao-Cruz Verde.....	1955	-	-	-	-	-	-	-	-	-
110-112	...do.....	Dos Estrellas (Jatibonico).....	1954	-	-	-	-	-	-	-	-	-
113-115	...do.....	Santa Maria del Mar.....	1955	-	-	-	-	-	-	-	-	-

¹Canadian production from (25-31). All other production from (42-52).

TABLE 5. - Production of foreign oilfields--Continued

Item	Continent and country	Field	Year of discovery	Production, 1,000 barrels per year ¹								
				1962	1963	1964	1965	1966	1967	1968	1969	1970
Europe:												
116	France.....	Lacq (Superior).....	1949	582	570	615	569	657	854	550	491	359
117	Germany.....	Dalun (Lingen).....	1942	534	456	414	356	321	301	287	139	243
118	...do.....	Georgsdorf.....	1944	3,056	3,406	3,747	3,644	3,555	3,559	3,569	1,773	3,669
119	...do.....	Nienhagen-Hanigsen.....	1899	1,728	1,355	1,250	998	850	733	701	313	508
120	...do.....	Suderbruch.....	1949	794	793	842	779	777	726	670	339	551
121	Netherlands.....	Ijsselmonde.....	1956	3,909	3,920	4,545	4,864	6,533	5,534	5,389	4,604	4,322
122	...do.....	Schoonebeek.....	1943	6,926	6,885	6,592	6,202	6,003	5,746	5,766	5,840	5,968
123	Yugoslavia.....	Lendava.....	1920	-	-	-	-	-	-	-	-	-
North America:												
124	Canada.....	Coleville.....	1951	-	-	-	-	-	-	-	-	-
125	...do.....	Excelsior.....	1949	634	590	543	474	459	472	459	526	-
126-128	...do.....	Fenn-Big Valley.....	1950	6,000	5,632	5,258	4,968	5,693	6,251	5,950	6,387	-
129	...do.....	Fosterton-Dollard.....	1952-1953	7,335	7,947	8,781	8,512	-	-	-	-	-
130-131	...do.....	Golden Spike.....	1949	4,223	3,702	3,074	8,227	13,580	16,531	15,868	14,819	-
132	...do.....	Swan Hills, South.....	1965	-	-	-	7,392	8,860	8,674	10,055	10,437	-
133	...do.....	Wizard Lake.....	1951	4,545	4,248	3,642	3,333	4,170	4,814	5,469	6,764	-
South America:												
134	Argentina.....	Cerro Dragon-Canadon Grande	-	-	-	-	-	-	-	-	-	-
135	Colombia.....	Payoa.....	1962	-	6,297	4,841	9,479	5,662	5,832	4,210	4,962	3,742
136	...do.....	Velasquez.....	1946	7,986	6,368	5,935	7,446	7,222	7,500	6,011	6,318	48,805
137	Ecuador.....	Composite.....	-	-	-	-	-	-	-	-	-	-
138	Venezuela.....	Amana.....	1928	-	-	-	-	-	-	-	-	-
139-140	...do.....	Bachaquero.....	1930	142,755	226,714	128,517	339,743	229,021	212,944	275,190	271,419	282,552
141	...do.....	Boscan.....	1946	29,402	25,601	20,446	17,338	20,824	20,890	21,742	19,879	19,100
142	...do.....	Cabimas.....	1917	22,078	23,407	24,026	22,818	22,850	22,220	28,957	29,756	32,336
143	...do.....	Chimire.....	1948-1952	17,242	9,791	22,939	15,266	14,315	13,616	12,863	10,708	8,392
144	...do.....	Dacion.....	1957	9,210	8,444	7,487	6,816	5,209	5,524	6,305	4,924	4,269
145-146	...do.....	Guara.....	1946	14,564	17,010	12,968	13,560	10,901	11,348	11,420	10,496	10,381
147	...do.....	La Ceibita.....	1953	1,721	1,588	1,841	3,364	3,303	4,030	3,775	3,880	4,170
148	...do.....	Lagunillas.....	1926	248,775	310,115	334,397	337,709	344,226	338,900	350,235	328,359	322,639
149	...do.....	Lama.....	1957	-	111,707	120,716	137,036	141,709	138,522	142,019	149,438	141,591
150-151	...do.....	Mara.....	1945	7,927	-	17,962	6,453	4,835	4,857	4,796	5,465	4,370
152-153	...do.....	Mata.....	1954	25,571	30,559	33,241	32,441	32,997	29,738	26,002	26,703	23,113
154	...do.....	Merey.....	1937	10,380	10,384	12,060	12,008	12,123	10,941	11,800	11,055	10,920
155-160	...do.....	Oficina.....	1937	24,255	23,077	21,028	20,200	19,038	19,358	20,199	18,879	17,801
161	...do.....	Pilon.....	1937	3,536	2,221	3,837	6,195	5,160	734	5,514	1,325	7,859
162	...do.....	Quiriquire.....	1928	13,972	12,516	12,207	12,875	13,399	12,963	12,059	10,845	9,883
163	...do.....	San Joaquin.....	1939	1,383	1,242	1,200	1,565	1,214	1,244	1,253	1,088	1,006
164	...do.....	Santa Rosa.....	1941	16,093	16,992	14,223	15,390	16,531	17,042	15,302	13,534	13,616
165	...do.....	Silvestre.....	1948	6,363	8,155	8,051	8,540	9,868	10,479	9,496	6,973	5,441
166	...do.....	Sinco.....	1953	13,836	13,543	12,892	13,092	13,149	13,641	16,694	12,572	11,039
167-168	...do.....	Tia Juana.....	1928	78,725	79,789	83,050	92,901	94,977	100,908	107,714	108,891	132,598
169	...do.....	Zapatos.....	1955	3,278	7,420	9,035	8,980	10,422	10,525	10,751	8,737	7,727

¹Canadian production from (25-31). All other production from (42-52).

TABLE 6. - Cumulative production of largest foreign fields, 1970

Item	Country	Field	Producing formation	Year of discovery	Production, 1,000 barrels
147	Venezuela...	Lagunillas....	Miocene.....	1926	7,222,190
81-88	Saudi Arabia	Ghawar.....	Jurassic.....	1948	5,547,717
60-61	Iran.....	Agha Jari.....	Oligocene.....	1937	4,354,681
138-139	Venezuela...	Bachaquero....	Miocene.....	1930	3,776,133
76-77	Saudi Arabia	Abqaiq.....	Jurassic.....	1941	3,248,757
165-167	Venezuela...	Tia Juana.....	Miocene.....	1928	2,366,327
64	Iran.....	Gach Saran....	...do.....	1928	2,014,747
96-98	Saudi Arabia	Safaniya.....	Cretaceous.....	1951	1,544,811
148	Venezuela...	Lama.....	...do.....	1957	1,368,351
51-52	Sumatra.....	Minas.....	Miocene.....	1944	1,154,722
141	Venezuela...	Cabimas.....	...do.....	1917	1,140,239
3	Algeria.....	Hassi Messaoud	Cambro-Ordovician.	1956	1,083,277
48	Borneo.....	Seria.....	Tertiary.....	1929	757,711
160	Venezuela...	Quiriquire....	Pliocene.....	1928	696,106
73	Neutral Zone	Wafra.....	Cretaceous.....	1955	682,948
58	Abu Dhabi...	Murban-Bab-Bu Hasa.	...do.....	1960	622,447
154-158	Venezuela...	Oficina.....	Miocene-Oligocene.	1937	585,709
144-145	...do.....	Guara.....	...do.....	1946	453,590
140	...do.....	Boscan.....	Eocene-Oligocene..	1946	400,558
6	Algeria.....	Zarzaitaine...	Devonian.....	1958	390,954
151-152	Venezuela...	Mata.....	Miocene-Oligocene.	1954	372,383
33-35	Libya.....	Sarir.....	Cretaceous.....	1961	366,646
25-31	...do.....	Nafoora.....	Tertiary.....	1965	364,537
149-150	Venezuela...	Mara.....	Cretaceous.....	1945	360,806
142	...do.....	Chimire.....	Miocene-Oligocene.	1948-1952	319,232
17	Libya.....	Dahra.....	Paleocene.....	1959	310,921
89-92	Saudi Arabia	Kharsaniya....	Jurassic.....	1956	296,094
95	...do.....	Qatif.....	...do.....	1945	275,514
162	Venezuela...	Santa Rosa....	-	1941	250,404
50	Sumatra.....	Duri.....	Tertiary.....	1941	192,791
9	Egypt.....	El Morgan.....	Miocene.....	1965	184,334
164	Venezuela...	Sinco.....	-	1953	166,357
75	Qatar.....	Maydan-Mahzan.	-	1963	161,889
135	Colombia....	Velasquez....	Eocene.....	1946	161,864
63	Iran.....	Darius.....	Cretaceous.....	1961	159,296
143	Venezuela...	Dacion.....	-	1957	154,761
122	Netherlands.	Schoonebeek...	Cretaceous.....	1943	139,524
153	Venezuela...	Merey.....	Miocene-Oligocene.	1937	139,388
49	Sumatra.....	Bekasap.....	-	1955	127,721
1-2	Algeria.....	Edjeleh.....	Carboniferous- Devonian.	1959	123,028

Africa

Analyses are included for six samples from four fields in Algeria, four samples from four fields in Egypt, six samples from six fields in Gabon, 20 samples from 11 fields in Libya, one sample from Morocco, and 10 samples from nine fields in Nigeria.

The Algerian sample is a composite from both North and South Hassi Messaoud fields, the largest producing fields in Algeria. Analyses of samples of the two next largest Algerian fields, Gassi Touil and Rhourde el Baguel, were published (13). Two samples from Egypt, Asl and Sudr, were from two of the older fields located on the Sinai Peninsula and are now being produced by Israel. The six samples from Gabon represent approximately 55 percent of that country's 1970 production, more than 38 percent from the Gamba field on the southwest coast.

Nine of the 11 fields sampled in Libya are located in the Sirte Basin. Haram, Khuff, and Ora fields are in the central basin; Nafoora is in the eastern part of the basin; and Dahra, Gacha, Ed Dib, Farrud, and Umm Farud are in the western part of the basin. The Sarir field is southeast of the basin, and the F-90 field is west of the basin.

Three of the samples from Nigeria were from the eastern area, and seven were from offshore fields in the delta area. Information on crude oil production from the fields is scarce because of the Nigerian Civil War of the 1960's.

Asia (Far East)

The major Far East oil-producing areas are those in Sumatra and Borneo. The five analyses that are reported represent more than 85 percent of the crude oil produced in this area.

Asia (Middle East)

Analyses are included for five of the 13 fields discovered in Iran in the 1960's. Three--Cyrus and Sasson, which produced from the Jurassic period, and Darius from the Cretaceous period--are in the Persian Gulf; these fields accounted for 6 percent of the 1970 production.

Analyses are included for two fields in Qatar: Idd-el-Shargi and Maydan-Mahzan. In 1970, 45 percent of the crude oil production in Qatar was from these two Persian Gulf fields.

Australia

Two of the Australian crude oils analyzed were produced from the Gippsland Basin. Thirty-four percent of the 1970 production was produced from the Halibut field. Kingfish field, like Halibut, produces from the Eocene-Paleocene series.

Caribbean

Eight analyses from three producing areas in Cuba are reported. Although no production information is available from the areas, occurrence of the oils and their characteristics are of geologic interest.

Europe

Analyses are included for crude oils produced in France, Germany, Netherlands, and Yugoslavia. The analytical work for this report was completed before samples could be obtained from the major fields discovered in the North Sea.

North America

The Canadian Department of Mines and Technical Surveys has published (7-9) analyses, based upon the Bureau of Mines method, of crude oils from all Canadian fields. The 10 Canadian analyses in this report were made in support of other Bureau research programs.

All available analyses of Mexican crude oils have been published (39).

South America

This report includes analyses from four of the 10 petroleum-producing countries of South America.

Analyses from 16 of the 31 fields in Venezuela with a cumulative production of more than 100 million barrels are reported. Of the 12 foreign fields with a cumulative production of more than 1 billion barrels, five--Lagunillas, Bachaquero, Tia Juana, Lama, and Cabimas--are in Venezuela.

CRUDE OIL ANALYSES

The following pages present the Bureau of Mines routine crude oil analysis for each crude oil sample. The analysis sheets are arranged by item numbers as shown in tables 1-4.

Bureau of Mines Bartlesville Laboratory Item 1
Sample 71042

IDENTIFICATION

Edjeleh field
Carboniferous

Africa
Algeria

GENERAL CHARACTERISTICS

Gravity, specific, 0.868 Gravity, ° API, 31.5 Pour point, ° F., below 5
Sulfur, percent, 0.10 Color, brownish black
Viscosity, Saybolt Universal at 77° F. 77 Sec., at 100° F. 69 sec. Nitrogen, percent, 0.053

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 741 mm. Hg
First drop, 162 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	2.4	2.4	0.748	57.7	-	1.41315	123.5		
4	257	3.1	5.5	.767	53.0	35	1.42317	129.0		
5	302	3.4	8.9	.789	47.8	37	1.43631	129.6		
6	347	3.3	12.2	.808	43.6	40	1.44770	132.5		
7	392	4.5	16.7	.821	40.9	40	1.45587	134.4		
8	437	3.7	20.4	.830	39.0	38	1.46110	136.3		
9	482	5.8	26.2	.836	37.8	36	1.46494	139.7		
10	527	5.4	31.6	.841	36.8	33	1.46822	143.4		

Stage 2—Distillation continued at 40 mm. Hg

11	392	6.5	38.1	0.861	32.8	39	1.47509	144.1	41	Below 5
12	437	7.1	45.2	.868	31.5	38	1.47311	147.0	47	Do.
13	482	7.0	52.2	.874	30.4	38	1.48054	149.7	62	20
14	527	7.7	59.9	.880	29.3	38			93	50
15	572	7.0	66.9	.886	28.2	37			160	90
Residuum		32.7	99.6	.922	22.0					

Carbon residuum, Conradson: Residuum, 3.5 percent; crude, 1.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	2.4	0.748	57.7	
Total gasoline and naphtha	16.7	0.791	47.3	
Kerosine distillate	-	-	-	
Gas oil	26.4	.848	35.3	
Nonviscous lubricating distillate	13.7	.869-.881	31.3-29.2	50-100
Medium lubricating distillate	10.1	.881-.889	29.2-27.7	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	32.7	.922	22.0	
Distillation loss	.4			

Bureau of Mines Bartlesville Laboratory Item 2
Sample 71041

IDENTIFICATION

Edjeleh field
Devonian

Africa
Algeria

GENERAL CHARACTERISTICS

Gravity, specific, 0.856 Gravity, ° API, 33.8 Pour point, ° F., 30
Sulfur, percent, 0.09 Color, brownish black
Viscosity, Saybolt Universal at 77° F. 59 sec., at 100° F. 52 sec. Nitrogen, percent, 0.062

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 741 mm. Hg
First drop, 154 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	2.3	2.3	0.727	63.1	-	1.41064	123.0		
4	257	5.5	7.8	.753	56.4	28	1.41771	127.0		
5	302	4.4	12.2	.774	51.3	30	1.42968	127.7		
6	347	4.3	16.5	.793	46.9	32	1.43989	133.7		
7	392	5.3	21.8	.805	44.3	32	1.44736	137.2		
8	437	4.0	25.8	.816	41.9	32	1.45340	146.4		
9	482	5.7	31.5	.825	40.0	31	1.45881	148.7		
10	527	5.4	36.9	.833	38.4	30	1.46363	150.8		

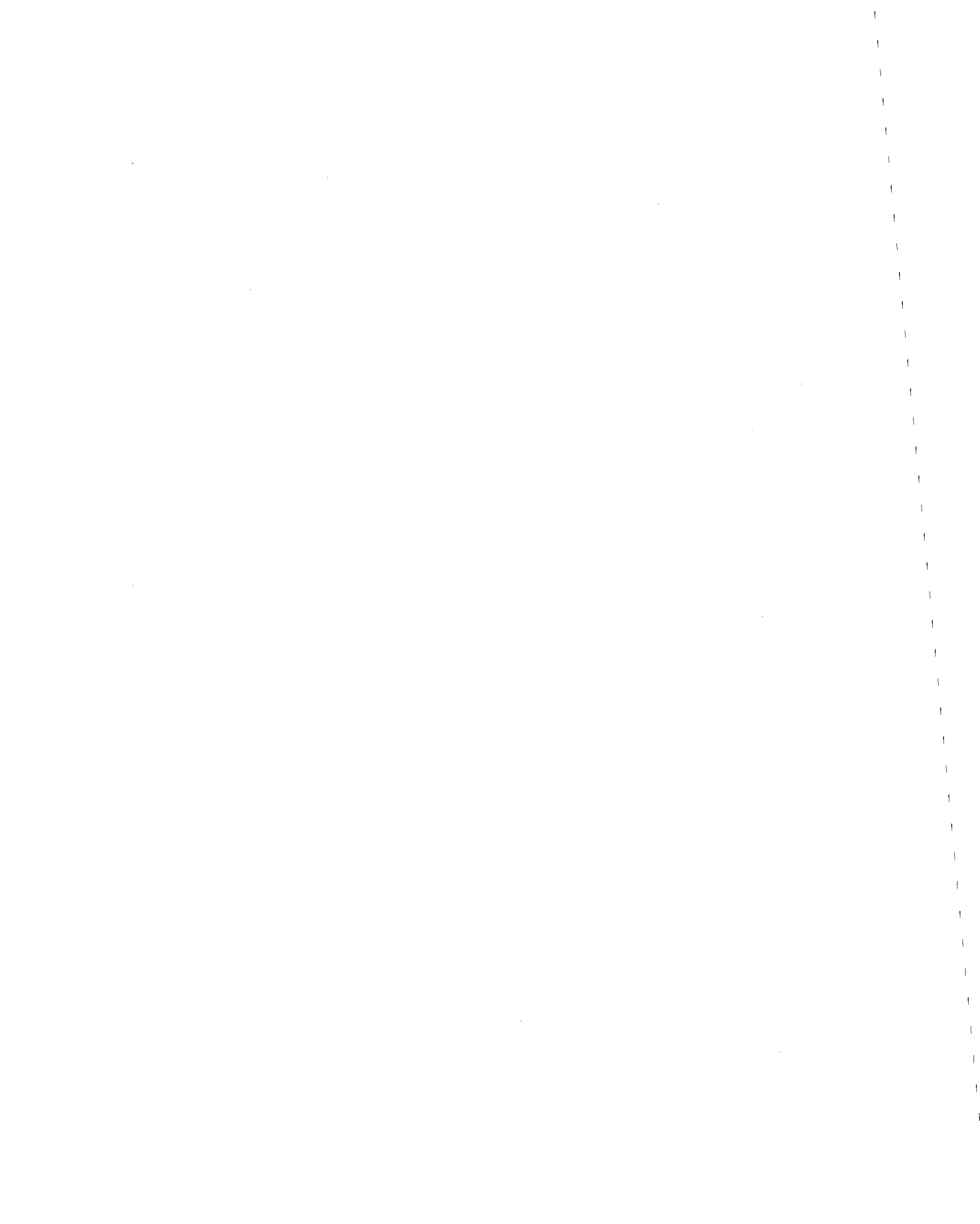
Stage 2—Distillation continued at 40 mm. Hg

11	392	5.2	42.1	0.852	34.6	35	1.47019	154.1	39	10
12	437	6.9	49.0	.859	33.2	34	1.47207	155.4	45	20
13	482	5.8	54.8	.869	31.3	36	1.47695	156.1	55	40
14	527	4.8	59.6	.877	29.8	36			73	60
15	572	3.8	63.4	.882	28.0	38			99	90
Residuum		35.4	98.8	.922	22.0					

Carbon residuum, Conradson: Residuum, 3.9 percent; crude, 1.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	2.3	0.727	63.1	
Total gasoline and naphtha	21.8	0.775	51.1	
Kerosine distillate	9.7	.821	40.8	
Gas oil	17.2	.849	35.2	
Nonviscous lubricating distillate	13.0	.864-.887	32.3-28.0	50-100
Medium lubricating distillate	1.7	.887-.891	28.0-27.2	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	35.4	.922	22.0	
Distillation loss	1.2			



Bureau of Mines Bartlesville Laboratory Item 3
Sample 67056

Hassi Messaoud field
Cambro-Ordovician

Africa
Algeria

GENERAL CHARACTERISTICS

Gravity, specific, 0.812 Gravity, ° API, 42.8 Pour point, ° F., below 5
Sulfur, percent, 0.15 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 34 sec.; 100°F., 33 sec. Nitrogen, percent, 0.018

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 744 mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1.....	122	3.8	3.8	0.634	91.7					
2.....	167	4.5	8.3	.669	80.0	7.0	1.37737	131.0		
3.....	212	6.5	14.8	.708	68.4	16	1.39664	132.9		
4.....	257	7.4	22.2	.730	62.3	17	1.40870	134.7		
5.....	302	8.8	31.0	.755	55.9	21	1.42143	137.8		
6.....	347	6.6	37.6	.775	51.1	24	1.43281	142.5		
7.....	392	6.3	43.9	.789	47.8	24	1.44101	144.8		
8.....	437	5.7	49.6	.804	44.5	26	1.44823	146.5		
9.....	482	6.2	55.8	.812	41.3	28	1.45625	151.0		
10.....	527	6.5	62.3	.835	38.0	31	1.46598	157.6		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
11.....	392	3.5	65.8	0.854	34.2	36	1.47540	163.8	40	Below 5
12.....	437	5.8	71.6	.863	32.5	36	1.47957	-	48	25
13.....	482	4.9	76.5	.877	29.8	39	1.48683	-	61	45
14.....	527	4.0	80.5	.888	27.8	41	1.49360	-	90	65
15.....	572	5.0	85.5	.895	26.6	42			170	80
Residuum		13.6	99.1	.946	18.1					

Carbon residue, Conradson: Residuum, 5.7 percent; crude, 0.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	14.8	0.667	77.5	
Total gasoline and naphtha.....	43.9	0.732	61.7	
Kerosine distillate.....	11.9	.812	42.8	
Gas oil.....	13.7	.847	35.6	
Nonviscous lubricating distillate.....	2.6	.865-.889	32.1-27.7	50-100
Medium lubricating distillate.....	5.6	.889-.898	27.7-26.1	100-200
Viscous lubricating distillate.....	0.8	.898-.899	26.1-25.9	Above 200
Residuum.....	13.6	.946	18.1	
Distillation loss.....	9			

Bureau of Mines Bartlesville Laboratory Item 4
Sample 71043

Tin Fouye field
Devonian

Africa
Algeria

IDENTIFICATION

GENERAL CHARACTERISTICS

Gravity, specific, 0.842 Gravity, ° API, 36.6 Pour point, ° F., 15
Sulfur, percent, 0.14 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 58 sec.; at 100°F. 45 sec. Nitrogen, percent, 0.061

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 751 mm. Hg
First drop, 118 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1.....	122									
2.....	167	1.8	1.8	0.671	79.4	-	1.38098	124.8		
3.....	212	4.1	5.9	.701	70.4	12	1.39278	126.6		
4.....	257	5.9	11.8	.726	63.4	15	1.40559	127.3		
5.....	302	6.7	18.5	.752	56.7	20	1.41844	128.2		
6.....	347	3.4	21.9	.770	52.3	22	1.42791	130.8		
7.....	392	4.2	26.1	.783	49.2	22	1.43575	134.8		
8.....	437	5.8	31.9	.792	45.6	23	1.44404	136.0		
9.....	482	6.4	38.3	.812	42.8	24	1.45208	138.6		
10.....	527	5.2	43.5	.824	40.2	25	1.45930	142.9		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
11.....	392	4.7	48.2	0.848	35.4	33	1.46827	144.4	40	10
12.....	437	7.7	55.9	.858	33.4	34	1.47252	150.7	46	20
13.....	482	6.5	62.4	.873	30.6	37	1.48085	151.9	62	50
14.....	527	5.0	67.4	.880	29.3	38			95	70
15.....	572	6.8	74.2	.890	27.5	39			173	90
Residuum		24.9	99.1	.940	19.0					

Carbon residue, Conradson: Residuum, 5.4 percent; crude, 1.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	5.9	0.692	73.0	
Total gasoline and naphtha.....	26.1	0.740	59.8	
Kerosine distillate.....	17.4	.811	42.9	
Gas oil.....	10.3	.853	34.5	
Nonviscous lubricating distillate.....	11.4	.862-.881	32.7-29.2	50-100
Medium lubricating distillate.....	7.6	.881-.893	29.2-26.9	100-200
Viscous lubricating distillate.....	1.4	.893-.896	26.9-26.5	Above 200
Residuum.....	24.9	.940	19.0	
Distillation loss.....	9			

Bureau of Mines Bartlesville Laboratory Item 5
Sample 71044

Tin Fouye field
Devonian

IDENTIFICATION

Africa
Algeria

GENERAL CHARACTERISTICS

Gravity, specific, 0.841 Gravity, ° API, 36.8 Pour point, ° F., 5
Sulfur, percent, 0.12 Color, brownish black
Viscosity, Saybolt Universal at 77° F. 58 sec., at 100° F. 45 sec. Nitrogen, percent, 0.062

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 753 mm. Hg
First drop, 126 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test. ° F.
1	122									
2	167	2.1	2.1	0.671	79.4	-	1.38523	123.3		
3	212	3.7	5.8	.700	70.6	12	1.39157	125.2		
4	257	5.6	11.4	.724	63.9	14	1.40431	130.3		
5	302	5.0	16.4	.743	58.9	16	1.41435	131.3		
6	347	5.2	21.6	.764	53.7	19	1.42490	134.2		
7	392	5.5	27.1	.783	49.2	22	1.43485	143.8		
8	437	5.3	32.4	.799	45.6	23	1.44382	144.4		
9	482	6.1	38.5	.812	42.8	24	1.45203	145.2		
10	527	5.7	44.2	.826	39.8	26	1.45922	148.5		

Stage 2—Distillation continued at 40 mm. Hg

11	392	6.2	50.4	0.850	35.0	34	1.46801	153.9	40	10
12	437	6.0	56.4	.861	32.8	35	1.47361	155.2	47	20
13	482	6.4	62.8	.873	30.6	37	1.48017	156.7	61	50
14	527	5.2	68.7	.880	29.3	38			95	70
15	572	5.0	73.7	.891	27.3	40			163	90
Residuum		25.9	99.6	.937	19.5					

Carbon residue, Conradson: Residuum, 5.1 percent; crude, 1.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	5.8	0.690	73.7	
Total gasoline and naphtha	27.1	0.740	59.8	
Kerosene distillate	11.4	.806	44.1	
Gas oil	16.2	.844	36.1	
Nonviscous lubricating distillate	11.4	.864-.881	32.4-29.1	50-100
Medium lubricating distillate	7.6	.881-.896	29.1-26.4	100-200
Viscous lubricating distillate				Above 200
Residuum	25.9	.937	19.5	
Distillation loss	.4			

Bureau of Mines Bartlesville Laboratory Item 6
Sample 71045

Zarzaitaine field
Devonian

IDENTIFICATION

Africa
Algeria

GENERAL CHARACTERISTICS

Gravity, specific, 0.822 Gravity, ° API, 40.6 Pour point, ° F., below 5
Sulfur, percent, 0.06 Color, brownish green
Viscosity, Saybolt Universal at 77° F. 42 sec., at 100° F. 40 sec. Nitrogen, percent, 0.018

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 751 mm. Hg
First drop, 126 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test. ° F.
1	122									
2	167	2.4	2.4	0.659	83.2	-	1.39941	125.5		
3	212	3.6	6.0	.702	70.1	13	1.39351	126.3		
4	257	5.7	11.7	.732	61.8	18	1.40935	129.1		
5	302	4.8	16.5	.752	56.7	20	1.42108	131.2		
6	347	6.3	22.8	.769	52.5	21	1.42996	132.8		
7	392	5.9	28.7	.781	49.7	21	1.43612	141.8		
8	437	6.2	34.9	.792	47.2	20	1.44223	143.3		
9	482	6.6	41.5	.804	44.5	21	1.44861	143.9		
10	527	5.8	47.3	.815	42.1	21	1.45424	146.6		

Stage 2—Distillation continued at 40 mm. Hg

11	392	6.1	53.4	0.835	38.0	27	1.46214	148.0	39	20
12	437	6.8	60.2	.843	36.4	27	1.46523	150.3	44	30
13	482	7.2	68.1	.853	34.4	28	1.47194	153.1	56	55
14	527	6.8	74.9	.865	32.1	30			84	75
15	572	6.4	81.3	.875	30.2	32			143	100
Residuum		18.2	99.5	.914	23.3					

Carbon residue, Conradson: Residuum, 2.5 percent; crude, 0.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	6.0	0.685	75.1	
Total gasoline and naphtha	28.7	0.744	58.8	
Kerosene distillate	18.6	.803	44.6	
Gas oil	13.2	.839	37.1	
Nonviscous lubricating distillate	12.8	.848-.868	35.4-31.6	50-100
Medium lubricating distillate	8.0	.868-.890	31.6-29.3	100-200
Viscous lubricating distillate				Above 200
Residuum	18.2	.914	23.3	
Distillation loss	.5			

Bureau of Mines Bartlesville Laboratory Item 7
Sample 50088

Asl field
Eocene

IDENTIFICATION

Africa
Egypt
Sinai

GENERAL CHARACTERISTICS

Gravity, specific, ... 0.921 Gravity, ° API, ... 22.1 Pour point, ° F., ... 50
Sulfur, percent, ... 2.05 Color, ... brownish black
Viscosity, Saybolt Universal at 100°F., 410 sec.; 130°F., 190 sec. Nitrogen, percent, ... -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, ... 746 mm. Hg
First drop, ... 174 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	257									
5	302	1.7	1.7	0.741	52.5	-	1.40300	122.1		
6	347	3.1	4.8	.730	57.2	12	1.41404	123.3		
7	392	3.4	8.2	.768	52.7	14	1.42602	125.3		
8	437	3.8	12.0	.786	48.5	17	1.43523	125.3		
9	482	4.5	16.5	.801	45.2	19	1.44367	130.1		
10	527	5.0	21.5	.817	41.7	-	1.45210	135.5		

Stage 2—Distillation continued at 40 mm. Hg

11	392	4.2	25.7	0.835	38.0	-	1.46220	137.3	37	20
12	437	6.3	32.0	.851	34.8	30	1.47029	140.1	44	40
13	482	6.3	38.3	.872	30.8	37			56	60
14	527	5.7	44.0	.888	27.9	41			79	80
15	572	6.9	50.9	.903	25.2	46			140	95
Residuum		48.7	99.6	1.010	8.6					

Carbon residue, Conradson: Residuum, 18.4 percent; crude, 9.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha	8.2	0.756	55.7	
Kerosine distillate	13.5	.805	44.7	
Gas oil	10.7	.846	35.8	
Nonviscous lubricating distillate	11.2	.862-.895	32.7-27.0	50-100
Medium lubricating distillate	7.5	.895-.911	27.0-23.8	100-200
Viscous lubricating distillate				Above 200
Residuum	48.7	1.010	8.6	
Distillation loss	0.4			

1/ Distillation discontinued at 518°F.

Bureau of Mines Bartlesville Laboratory Item 8
Sample 70011

El Alamein field
Cretaceous

IDENTIFICATION

Africa
Egypt

GENERAL CHARACTERISTICS

Gravity, specific, ... 0.855 Gravity, ° API, ... 34.0 Pour point, ° F., ... 55
Sulfur, percent, ... 0.84 Color, ... greenish black
Viscosity, Saybolt Universal at 77°F., 56 sec.; 100°F., 49 sec. Nitrogen, percent, ... 0.075

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, ... 754 mm. Hg
First drop, ... 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	1.6	1.6	0.630	93.1					
2	167	2.7	4.3	.658	83.5	1.8	1.37226	127.4		
3	212	4.3	8.6	.692	70.9	11	1.39336	129.3		
4	257	5.5	14.1	.725	63.7	15	1.40600	130.1		
5	302	4.9	19.0	.745	58.4	17	1.41613	131.3		
6	347	4.8	23.8	.764	53.7	19	1.42547	132.9		
7	392	4.8	28.6	.783	49.2	22	1.43508	137.5		
8	437	4.2	32.8	.798	45.8	23	1.44296	138.7		
9	482	5.1	37.9	.812	42.8	24	1.45230	144.3		
10	527	5.6	43.5	.830	39.0	28	1.46211	150.4		

Stage 2—Distillation continued at 40 mm. Hg

11	392	6.5	50.0	0.854	34.2	36	1.47376	153.2	41	20
12	437	7.4	57.4	.869	31.3	39	1.48039	155.3	49	55
13	482	6.0	63.4	.883	28.7	42	1.48881	168.3	67	75
14	527	4.3	67.7	.890	27.5	42			91	90
15	572	3.2	70.9	.909	24.2	48			-	100
Residuum		28.3	99.2	.993	11.0					

Carbon residue, Conradson: Residuum, 14.1 percent; crude, 4.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.6	0.673	78.7	
Total gasoline and naphtha	28.6	0.729	62.6	
Kerosine distillate	9.3	.806	44.1	
Gas oil	16.2	.849	35.3	
Nonviscous lubricating distillate	12.8	.870-.897	31.2-26.3	50-100
Medium lubricating distillate	4.0	.897-.917	26.3-22.8	100-200
Viscous lubricating distillate				Above 200
Residuum	28.3	.993	11.0	
Distillation loss	0.8			

Bureau of Mines Bartlesville Laboratory Item 9
Sample 69069

IDENTIFICATION

El Morgan field
Miocene

Africa
Egypt

GENERAL CHARACTERISTICS

Gravity, specific, 0.865 Gravity, ° API, 32.1 Pour point, ° F., 40
Sulfur, percent, 1.67 Color, brownish black
Viscosity, Saybolt Universal at 77°F, 77 sec.; 100°F, 60 sec. Nitrogen, percent, 0.183

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Branch 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1.....	122	2.6	2.6	0.646	87.5					
2.....	167	2.3	4.9	.662	82.2	3.7	1.38759	129.7		
3.....	212	3.7	8.6	.706	68.9	15	1.39538	134.5		
4.....	257	4.3	12.9	.735	61.0	19	1.40905	137.2		
5.....	302	4.7	17.6	.756	55.7	22	1.42093	140.3		
6.....	347	4.1	21.7	.776	50.8	24	1.43124	140.9		
7.....	392	3.9	25.6	.791	47.4	25	1.43933	142.3		
8.....	437	4.1	29.7	.804	44.5	26	1.44745	144.4		
9.....	482	4.1	33.8	.819	41.3	28	1.45582	150.9		
10.....	527	4.5	38.3	.835	38.0	31	1.46420	151.7		

Branch 2—Distillation continued at 40 mm. Hg

11.....	392	4.1	42.4	0.856	33.8	36	1.47408	163.6	39	20
12.....	437	5.1	47.5	.864	32.3	36	1.47837	159.2	47	40
13.....	482	5.2	52.7	.875	30.2	38	1.48527	168.1	60	70
14.....	527	4.9	57.6	.888	27.8	41			92	120
15.....	572	5.7	63.3	.898	26.1	43				140
Residuum		34.5	97.8	.984	12.3					

Carbon residue, Conradson: Residuum, 9.8 percent; crude, 3.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.6	0.676	77.8	
Total gasoline and naphtha	25.6	0.734	61.2	
Kerosine distillate	8.2	.812	42.9	
Gas oil	12.3	.850	34.9	
Nonviscous lubricating distillate	9.5	.867-.889	31.8-27.7	50-100
Medium lubricating distillate	6.6	.889-.901	27.7-25.5	100-200
Viscous lubricating distillate	1.1	.901-.903	25.5-25.1	Above 200
Residuum	34.5	.984	12.3	
Distillation loss	2.2			

Bureau of Mines Bartlesville Laboratory Item 10
Sample 50089

IDENTIFICATION

Sudr field
Eocene

Africa
Egypt
Sinai

GENERAL CHARACTERISTICS

Gravity, specific, 0.918 Gravity, ° API, 22.6 Pour point, ° F., 40
Sulfur, percent, 2.06 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 300 sec.; 130°F, 155 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Branch 1—Distillation at atmospheric pressure, 742 mm. Hg
First drop, 135 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1.....	122									
2.....	167									
3.....	212	1.6	1.6	0.684	75.4	-	1.39672	123.1		
4.....	257	2.5	4.1	.719	65.3	12	1.40098	123.8		
5.....	302	3.4	7.5	.741	59.5	15	1.41177	124.0		
6.....	347	3.1	10.6	.761	54.4	17	1.42244	126.4		
7.....	392	3.2	13.8	.780	49.9	20	1.43235	130.3		
8.....	437	3.7	17.5	.798	45.8	23	1.44234	135.1		
9.....	482	4.0	21.5	.813	42.6	23	1.45120	139.3		
10.....	527	4.6	26.1	.829	39.2	-	1.46033	148.4		

Branch 2—Distillation continued at 40 mm. Hg

11.....	392	4.2	30.3	0.849	35.2	-	1.47000	149.6	40	20
12.....	437	6.3	36.6	.865	32.5	36	1.47899	155.4	45	40
13.....	482	5.1	41.7	.881	29.1	41			57	60
14.....	527	5.4	47.1	.896	26.4	45			82	80
15.....	572	7.0	54.1	.910	24.0	49			135	95
Residuum		45.2	99.3	1.020	7.2					

Carbon residue, Conradson: Residuum, 21.6 percent; crude, 10.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	1.6	0.684	75.4	
Total gasoline and naphtha	13.8	0.744	58.7	
Kerosine distillate	7.7	.806	44.1	
Gas oil	14.1	.847	35.6	
Nonviscous lubricating distillate	10.9	.869-.901	31.3-25.6	50-100
Medium lubricating distillate	7.6	.901-.918	25.6-22.6	100-200
Viscous lubricating distillate				Above 200
Residuum	45.2	1.020	7.2	
Distillation loss	0.7			

1/ Distillation discontinued at 518°F.

Bureau of Mines Bartlesville Laboratory Item 11
Sample 68052

IDENTIFICATION

Batanga field
Senonian, Cretaceous
5,986 - 6,183 feet

Africa
Gabon
Ogoe Maritime

GENERAL CHARACTERISTICS

Gravity, specific, 0.833 Gravity, ° API, 38.4 Pour point, ° F., 5
Sulfur, percent, 0.44 Color, greenish black
Viscosity, Saybolt Universal at 77°F, 45 sec.; 100°F, 39 sec. Nitrogen, percent, 0.060

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 79 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122	2.1	2.1	0.641	89.2					
2	167	2.3	4.4	.671	79.4	8.0	1.37962	125.1		
3	212	4.3	8.7	.711	67.5	17	1.39845	129.7		
4	257	6.3	15.0	.737	60.5	20	1.41165	135.3		
5	302	6.6	21.6	.758	55.2	23	1.42423	140.6		
6	347	6.1	27.7	.778	50.4	25	1.43451	144.6		
7	392	5.0	32.7	.791	47.4	25	1.44154	144.6		
8	437	5.3	38.0	.801	45.2	24	1.44798	147.1		
9	482	5.8	43.8	.815	42.1	26	1.45530	151.9		
10	527	5.7	49.5	.827	39.6	27	1.46235	156.9		

Stage 2—Distillation continued at 40 mm. Hg

11	392	5.0	54.5	0.842	36.6	30	1.46880	158.4	40	20
12	437	6.4	60.9	.851	34.8	30	1.47259	158.6	46	40
13	482	6.1	67.0	.866	31.9	34	1.48057	-	60	60
14	527	5.1	72.1	.877	29.8	36			84	80
15	572									
Residuum		27.1	99.2	.941	18.9					

Carbon residue, Conradson: Residuum, 4.7 percent; crude, 1.4 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.7	0.684	75.5	
Total gasoline and naphtha	32.7	0.743	59.0	
Kerosine distillate	11.1	.808	43.6	
Gas oil	15.7	.832	37.1	
Nonviscous lubricating distillate	12.6	.855-.882	33.9-28.9	50-100
Medium lubricating distillate	-	-	-	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	27.1	.941	18.9	
Distillation loss	0.8			

1/ Distillation discontinued at 522°F.

Bureau of Mines Bartlesville Laboratory Item 12
Sample 68046

IDENTIFICATION

Gamba field
Gamba, Cretaceous
2,020 - 3,090 feet

Africa
Gabon
Sette Cama

GENERAL CHARACTERISTICS

Gravity, specific, 0.878 Gravity, ° API, 29.7 Pour point, ° F., 40
Sulfur, percent, 0.18 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 130 sec.; 130°F, 84 sec. Nitrogen, percent, 0.118

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 88 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	0.7	0.7	0.708	68.4	-	1.39463	127.5		
4	257	1.1	1.8	.726	63.4	15	1.40303	128.0		
5	302	2.0	3.8	.749	57.4	18	1.41645	128.7		
6	347	2.6	6.4	.775	51.1	24	1.43076	133.5		
7	392	2.4	8.8	.791	47.4	25	1.44014	129.9		
8	437	4.0	12.8	.801	45.2	24	1.44549	139.4		
9	482	4.9	17.7	.811	43.0	24	1.45127	140.5		
10	527	5.1	22.8	.822	40.6	24	1.45746	141.6		

Stage 2—Distillation continued at 40 mm. Hg

11	392	6.0	28.8	0.841	36.8	29	1.46390	141.6	41	20
12	437	6.7	35.5	.849	35.2	29	1.46740	145.6	48	45
13	482	5.6	41.1	.857	33.6	30			60	75
14	527	9.3	50.4	.862	32.7	29			94	105
15	572	5.2	55.6	.869	31.3	29			155	115
Residuum		43.8	99.4	.937	19.5					

Carbon residue, Conradson: Residuum, 6.1 percent; crude, 2.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	0.7	0.708	68.4	
Total gasoline and naphtha	8.8	0.762	54.2	
Kerosine distillate	14.0	.812	42.7	
Gas oil	10.4	.844	36.2	
Nonviscous lubricating distillate	13.3	.850-.863	34.9-32.5	50-100
Medium lubricating distillate	9.1	.863-.872	32.5-30.9	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	43.8	.937	19.5	
Distillation loss	0.6			

Bureau of Mines Bartlesville Laboratory Item 13
Sample 68049

Lopez, Cap field
Senonian, Cretaceous
5,396 - 5,674 feet

IDENTIFICATION

Africa
Gabon
Ogoe Maritime

GENERAL CHARACTERISTICS

Gravity, specific, 0.873 Gravity, ° API, 30.6 Pour point, ° F., 55
Sulfur, percent, 0.50 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 131 sec.; 130°F, 86 sec. Nitrogen, percent, 0.149

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure. 753 mm. Hg
First drop, 122 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1	122									
2	167	1.8	1.8	0.675	78.1	-	1.37836	127.6		
3	212	2.3	4.1	.698	71.2	11	1.39230	127.9		
4	257	2.1	6.2	.725	63.7	15	1.40452	129.7		
5	302	1.7	7.9	.734	61.3	11	1.40976	131.8		
6	347	1.5	9.4	.740	59.7	7.3	1.41341	132.7		
7	392	3.2	12.6	.753	56.4	7.3	1.41971	133.5		
8	437	5.8	18.4	.780	49.9	14	1.43457	137.2		
9	482	5.1	23.5	.804	44.5	21	1.44773	140.5		
10	527	5.1	28.6	.817	41.7	22	1.45421	144.9		

Stage 2—Distillation continued at 40 mm. Hg

11	392	7.8	36.4	0.837	37.6	27	1.46347	146.1	40	15
12	437	6.6	43.0	.847	35.6	28	1.46893	150.2	47	40
13	482	6.2	49.2	.862	32.7	32			59	60
14	527	5.2	54.4	.873	30.6	34			84	85
15	572	6.9	61.3	.885	28.4	37			150	100
Residuum		38.6	99.9	.960	15.9					

Carbon residue, Conradson: Residuum, 5.6 percent; crude, 2.4 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	4.1	0.688	74.2	
Total gasoline and naphtha	12.6	0.723	64.2	
Kerosine distillate	16.0	.799	45.5	
Gas oil	12.7	.841	36.9	
Nonviscous lubricating distillate	12.0	.851-.876	34.8-30.0	50-100
Medium lubricating distillate	8.0	.876-.892	30.0-27.2	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	38.6	.960	15.9	
Distillation loss	0.1			

Bureau of Mines Bartlesville Laboratory Item 14
Sample 68050

Lopez, Nord field
Senonian, Cretaceous
5,632 - 5,904 feet

IDENTIFICATION

Africa
Gabon
Ogoe Maritime

GENERAL CHARACTERISTICS

Gravity, specific, 0.901 Gravity, ° API, 25.5 Pour point, ° F., 25
Sulfur, percent, 0.86 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 304 sec.; 130°F, 138 sec. Nitrogen, percent, 0.190

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure. 753 mm. Hg
First drop, 95 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1	122									
2	167	2.0	2.0	0.671	79.4	-	1.37626	125.7		
3	212	1.2	3.2	.710	67.8	17	1.39556	127.2		
4	257	2.7	5.9	.733	61.5	18	1.40805	128.3		
5	302	2.5	8.4	.753	56.4	20	1.41928	132.6		
6	347	2.4	10.8	.773	51.6	23	1.43025	133.9		
7	392	2.7	13.5	.790	47.6	25	1.43896	137.7		
8	437	3.1	16.6	.805	44.3	26	1.44654	144.6		
9	482	4.4	21.0	.821	40.9	29	1.45568	144.2		
10	527	4.8	25.8	.836	37.8	31	1.46390	158.9		

Stage 2—Distillation continued at 40 mm. Hg

11	392	3.9	29.7	0.857	33.6	37	1.47275	151.2	41	10
12	437	6.0	35.7	.867	31.7	38	1.47847	156.0	51	30
13	482	6.6	42.3	.887	28.0	44			77	55
14	527	6.6	48.9	.901	25.5	48			150	80
15	572									
Residuum		50.8	99.7	.969	14.5					

Carbon residue, Conradson: Residuum, 7.8 percent; crude, 4.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	3.2	0.686	74.9	
Total gasoline and naphtha	13.5	0.744	58.7	
Kerosine distillate	7.5	.814	42.3	
Gas oil	11.2	.849	35.1	
Nonviscous lubricating distillate	8.9	.866-.891	31.9-27.2	50-100
Medium lubricating distillate	7.8	.891-.908	27.2-24.3	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	50.8	.969	14.5	
Distillation loss	0.3			

1/ Distillation discontinued at 527°F.

Bureau of Mines Bartlesville Laboratory Item 15
Sample 68047

IDENTIFICATION

Pointe Clairette field
Senonian, Cretaceous
3,608 - 5,838 feet

Africa
Gabon
Ogoe Maritime

GENERAL CHARACTERISTICS

Gravity, specific, 0.869 Gravity, ° API, 31.3 Pour point, ° F., 15
Sulfur, percent, 0.55 Color, brownish black
Viscosity, Saybolt Universal at 77°F, 102 sec.; 100°F, 78 sec. Nitrogen, percent, 0.148

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure. 743 mm. Hg
First drop 81 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test. ° F.
1	122									
2	167	2.8	2.8	0.653	85.2	-	1.38353	135.3		
3	212	2.7	5.5	.701	70.4	12	1.39592	140.1		
4	257	3.9	9.4	.730	62.3	17	1.40793	133.8		
5	302	4.5	13.9	.752	56.7	20	1.41951	135.6		
6	347	3.8	17.7	.770	52.3	22	1.42893	138.1		
7	392	4.0	21.7	.784	49.0	22	1.43677	138.5		
8	437	3.8	25.5	.798	45.8	23	1.44380	139.9		
9	482	4.5	30.0	.811	43.0	24	1.45077	141.2		
10	527	5.0	35.0	.824	40.2	25	1.45838	146.3		

Stage 2—Distillation continued at 40 mm. Hg

11	392	5.6	40.6	0.844	36.2	31	1.46677	148.8	41	Below 5
12	437	5.3	45.9	.854	34.2	32	1.47181	151.5	48	15
13	482	5.4	51.3	.871	31.0	36	1.48146	157.8	67	40
14	527	5.5	56.8	.891	27.3	43	1.48968	-	110	55
15	572									
Residuum		42.7	99.5	.957						

Carbon residuum, Conradson: Residuum, 8.5 percent; crude, 4.0 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	5.5	0.677	77.6	
Total gasoline and naphtha	21.7	0.738	60.2	
Kerosene distillate	13.3	.812	42.7	
Gas oil	8.8	.847	35.6	
Nonviscous lubricating distillate	9.0	.856-.886	33.8-28.1	50-100
Medium lubricating distillate	4.0	.886-.901	28.1-25.5	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	42.7	.957	16.4	
Distillation loss	0.5			

1/ Distillation discontinued at 518°F.

Bureau of Mines Bartlesville Laboratory Item 16
Sample 68048

IDENTIFICATION

Tchengue field
Mandorave, Miocene
3,280 - 4,169 feet

Africa
Gabon
Ogoe Maritime

GENERAL CHARACTERISTICS

Gravity, specific, 0.867 Gravity, ° API, 31.7 Pour point, ° F., 30
Sulfur, percent, 0.80 Color, brownish black
Viscosity, Saybolt Universal at 77°F, 80 sec.; 100°F, 63 sec. Nitrogen, percent, 0.148

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure. 753 mm. Hg
First drop 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test. ° F.
1	122	2.2	2.2	0.636	90.9					
2	167	2.1	4.3	.668	80.3	6.5	1.37996	128.8		
3	212	3.9	8.2	.711	67.5	17	1.39667	128.2		
4	257	4.5	12.7	.736	60.8	20	1.41073	131.7		
5	302	4.4	17.1	.761	54.4	24	1.42340	137.5		
6	347	4.3	21.4	.780	49.9	26	1.43414	141.6		
7	392	3.5	24.9	.795	46.5	27	1.44310	144.3		
8	437	3.4	28.3	.809	43.4	28	1.44984	145.5		
9	482	4.5	32.8	.820	41.1	28	1.45649	149.4		
10	527	4.9	37.7	.831	38.8	29	1.46321	155.5		

Stage 2—Distillation continued at 40 mm. Hg

11	392	5.0	42.7	0.848	35.4	33	1.47082	157.1	41	15
12	437	5.5	48.2	.861	32.8	35	1.47587	158.2	48	40
13	482	4.8	53.0	.879	29.5	40	1.48413	162.6	63	60
14	527	5.3	58.3	.888	27.8	41			100	75
15	572	4.8	63.1	.898	26.1	43			180	90
Residuum		36.1	99.2	.972	14.1					

Carbon residuum, Conradson: Residuum, 7.9 percent; crude, 3.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.2	0.680	76.6	
Total gasoline and naphtha	24.9	0.738	60.3	
Kerosene distillate	7.9	.815	42.1	
Gas oil	13.3	.844	36.1	
Nonviscous lubricating distillate	9.5	.863-.888	32.4-27.8	50-100
Medium lubricating distillate	6.3	.888-.901	27.8-25.6	100-200
Viscous lubricating distillate	1.2	.901-.903	25.6-25.2	Above 200
Residuum	36.1	.972	14.1	
Distillation loss	0.8			

Bureau of Mines Bartlesville Laboratory Item 17
Sample 87082

IDENTIFICATION

Dahra field
Paleocene

Africa
Libya
Tripolitania

GENERAL CHARACTERISTICS

Gravity, specific, 0.845 Gravity, ° API, 36.0 Pour point, ° F., below 5
Sulfur, percent, 0.29 Color, brownish black
Viscosity, Saybolt Universal at 77°F. 48 sec.; 100°F. 40 sec. Nitrogen, percent, 0.081

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 748 mm. Hg
First drop, 144 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test. ° F.
1	122									
2	167	0.7	0.7	0.687	74.5	-	1.38374	128.6		
3	212	1.7	2.4	.711	67.5	17	1.39676	127.7		
4	257	5.0	7.4	.735	61.0	19	1.40923	130.6		
5	302	7.5	14.9	.756	55.7	22	1.42038	135.9		
6	347	8.1	23.0	.775	51.1	24	1.43093	139.2		
7	392	6.6	29.6	.793	46.9	26	1.43972	141.3		
8	437	6.7	36.3	.806	44.1	27	1.44753	144.8		
9	482	6.8	43.1	.820	41.1	28	1.45522	148.7		
10	527	8.4	51.5	.831	38.8	29	1.46265	153.1		

Stage 2—Distillation continued at 40 mm. Hg

11	392	4.3	55.8	0.852	34.6	35	1.47014	155.9	40	35
12	437	6.7	62.5	.859	33.2	34	1.47371	156.8	45	50
13	482	5.4	67.9	.874	30.4	38			58	70
14	527	5.1	73.0	.883	28.7	39			79	85
15	572	5.7	78.7	.896	26.4	42			140	100
Residuum		19.8	98.5	.968	14.7					

Carbon residue, Conradson: Residuum, 9.0 percent; crude, 2.0 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	2.4	0.704	69.5	
Total gasoline and naphtha	29.6	0.762	54.3	
Kerosine distillate	13.5	.813	42.5	
Gas oil	18.4	.845	36.0	
Nonviscous lubricating distillate	10.8	.865-.887	32.1-27.9	50-100
Medium lubricating distillate	6.4	.887-.903	27.9-25.2	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	19.8	.968	14.7	
Distillation loss	1.5			

Bureau of Mines Bartlesville Laboratory Item 18
Sample 68036

IDENTIFICATION

Ed Dib field
Gir, L1-A, Eocene
3,698 - 3,759 feet

Africa
Libya
Tripolitania

GENERAL CHARACTERISTICS

Gravity, specific, 0.854 Gravity, ° API, 34.2 Pour point, ° F., 25
Sulfur, percent, 0.78 Color, greenish black
Viscosity, Saybolt Universal at 77°F. 58 sec.; 100°F. 46 sec. Nitrogen, percent, 0.151

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 747 mm. Hg
First drop, 177 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test. ° F.
1	122	2.4	2.4	0.635	91.3					
2	167	2.1	4.5	.660	82.9	2.7	1.37484	127.5		
3	212	3.4	7.9	.708	68.4	16	1.39532	127.2		
4	257	5.2	13.1	.738	60.2	21	1.41008	126.6		
5	302	4.8	17.9	.760	54.7	24	1.42163	131.1		
6	347	4.8	22.7	.782	49.4	27	1.43275	135.2		
7	392	5.4	28.1	.800	45.4	30	1.44287	138.1		
8	437	3.9	32.0	.813	42.5	30	1.45079	143.0		
9	482	5.4	37.4	.825	40.0	31	1.45784	148.5		
10	527	5.6	43.0	.837	37.6	31	1.46473	154.4		

Stage 2—Distillation continued at 40 mm. Hg

11	392	5.4	48.4	0.860	33.0	38	1.47327	155.4	42	25
12	437	6.6	55.0	.867	31.7	38	1.47870	151.7	50	40
13	482	4.7	59.7	.879	29.5	40	1.48693	-	66	65
14	527	4.5	64.2	.890	27.5	42			98	85
15	572	6.3	70.5	.900	25.7	44			195	100
Residuum		27.4	97.9	.977	13.3					

Carbon residue, Conradson: Residuum, 8.7 percent; crude, 2.7 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	7.9	0.673	78.7	
Total gasoline and naphtha	28.1	0.743	59.0	
Kerosine distillate	9.3	.820	41.1	
Gas oil	14.3	.852	34.5	
Nonviscous lubricating distillate	10.3	.867-.890	31.7-27.5	50-100
Medium lubricating distillate	5.6	.890-.901	27.5-25.6	100-200
Viscous lubricating distillate	2.9	.901-.906	25.6-24.7	Above 200
Residuum	27.4	.977	13.3	
Distillation loss	2.1			

Bureau of Mines Bartlesville Laboratory Item 19
Sample 68037

IDENTIFICATION

Ed Dib field
Gir, L1-P, Eocene
2,666 - 2,697

Africa
Libya
Tripolitania

GENERAL CHARACTERISTICS

Gravity, specific, 0.836 Gravity, ° API, 37.8 Pour point, ° F., below 5
Sulfur, percent, 1.31 Color, greenish black
Viscosity, Saybolt Universal at 77°F., 42 sec.; 100°F., 41 sec. Nitrogen, percent, 0.106

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STRAOS 1—Distillation at atmospheric pressure, 747 mm. Hg

First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	3.9	3.9	0.635	91.3					
2	167	2.8	6.7	.668	80.3	6.5	1.37607	126.2		
3	212	5.2	11.9	.713	67.0	18	1.39890	128.2		
4	257	6.7	18.6	.740	59.7	22	1.41224	132.1		
5	302	6.1	24.7	.763	54.0	25	1.42464	137.4		
6	347	5.1	29.8	.782	49.4	27	1.43451	137.9		
7	392	4.4	34.2	.798	45.8	29	1.44243	140.7		
8	437	5.3	39.5	.809	43.4	28	1.44930	143.9		
9	482	5.8	45.3	.820	41.1	28	1.45676	149.4		
10	527	6.1	51.4	.834	38.2	30	1.46399	154.8		

STRAOS 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	2.8	54.2	0.854	34.2	36	1.47259	155.5	41	30
12	437	6.0	60.2	.860	33.0	35	1.47633	159.1	48	45
13	482	4.5	64.7	.876	30.0	32	1.48390	-	60	60
14	527	4.4	69.1	.890	27.5	42			89	80
15	572	5.1	74.2	.904	25.0	46			170	90
Residuum		22.3	96.5	.982	12.6					

Carbon residue, Conradson: Residuum, 8.6 percent; crude, 2.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	11.9	0.677	77.6	
Total gasoline and naphtha	34.2	0.736	60.8	
Kerosine distillate	11.1	.815	42.2	
Gas oil	12.8	.846	35.8	
Nonviscous lubricating distillate	9.5	.863-.892	32.5-27.2	50-100
Medium lubricating distillate	5.8	.892-.909	27.2-24.1	100-200
Viscous lubricating distillate	0.8	.909-.912	24.1-23.7	Above 200
Residuum	22.3	.982	12.6	
Distillation loss	3.5			

Bureau of Mines Bartlesville Laboratory Item 20
Sample 68023

IDENTIFICATION

F-90 field
Ras Hamia, Triassic
4,453 - 4,489 feet

Africa
Libya
Tripolitania

GENERAL CHARACTERISTICS

Gravity, specific, 0.790 Gravity, ° API, 47.6 Pour point, ° F., below 5
Sulfur, percent, 0.09 Color, greenish black
Viscosity, Saybolt Universal at 77°F., 37 sec.; 100°F., 37 sec. Nitrogen, percent, 0.028

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STRAOS 1—Distillation at atmospheric pressure, 737 mm. Hg

First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	8.6	8.6	0.625	94.9					
2	167	7.2	15.8	.664	81.6	4.6	1.37719	125.3		
3	212	9.0	24.8	.704	69.5	14	1.39445	126.3		
4	257	8.8	33.6	.728	62.9	16	1.40615	128.3		
5	302	6.1	39.7	.749	57.4	18	1.41800	133.4		
6	347	5.2	44.9	.771	52.0	22	1.42950	138.1		
7	392	4.0	48.9	.788	48.1	24	1.43855	140.2		
8	437	3.6	52.5	.802	44.9	25	1.44615	141.6		
9	482	3.8	56.3	.813	42.5	25	1.45252	144.1		
10	527	4.4	60.7	.824	40.2	25	1.45870	147.8		

STRAOS 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	2.6	63.3	0.838	37.4	28	1.46650	149.9	40	15
12	437	5.1	68.4	.848	35.4	29	1.46972	148.2	47	35
13	482	4.0	72.4	.858	33.4	30	1.47441	154.1	58	60
14	527	3.8	76.2	.868	31.5	32			84	70
15	572	4.7	80.9	.876	30.0	33			145	105
Residuum		17.9	98.8	.927	21.1					

Carbon residue, Conradson: Residuum, 6.0 percent; crude, 1.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	24.8	0.665	81.3	
Total gasoline and naphtha	48.9	0.708	68.3	
Kerosine distillate	11.8	.814	42.4	
Gas oil	6.4	.843	36.4	
Nonviscous lubricating distillate	8.3	.851-.870	34.8-31.1	50-100
Medium lubricating distillate	5.5	.870-.880	31.1-29.2	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	17.9	.927	21.1	
Distillation loss	1.2			

Bureau of Mines Bartlesville Laboratory Item 21
Sample 68040

IDENTIFICATION

Focha field
Gir, LI-G, Eocene
3,076 - 3,086 feet

Africa
Libya
Tripolitania

GENERAL CHARACTERISTICS

Gravity, specific, 0.867 Gravity, ° API, 31.7 Pour point, ° F, 55
Sulfur, percent, 1.04 Color, brownish black
Viscosity, Saybolt Universal at 77°F, 82 sec.; 100°F, 56 sec. Nitrogen, percent, 0.119

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 746 mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	1.7	1.7	0.636	91.0					
2	167	1.5	3.2	.663	81.9	4.2	1.37179	124.2		
3	212	3.0	6.2	.705	69.2	14	1.39393	125.7		
4	257	4.0	10.2	.734	61.3	19	1.40805	125.2		
5	302	4.1	14.3	.757	55.4	22	1.42024	131.2		
6	347	3.7	18.0	.777	50.6	25	1.43062	133.0		
7	392	3.8	21.8	.795	46.5	27	1.43995	136.5		
8	437	4.4	26.2	.812	42.8	30	1.44853	139.6		
9	482	4.9	31.1	.830	39.0	33	1.45611	142.0		
10	527	4.8	35.9	.841	36.8	33	1.46262	148.4		

STAGE 2—Distillation continued at 40 mm. Hg

11	392	4.7	40.6	0.854	34.2	36	1.47061	153.8	41	20
12	437	7.3	47.9	.860	33.0	35	1.47581	159.7	48	55
13	482	7.0	54.9	.876	30.0	39	1.48461	161.8	66	65
14	527	5.7	60.6	.890	27.5	42			105	100
15	572	7.9	68.5	.901	25.5	45			225	110
Residuum		29.4	97.9	.977	13.3					

Carbon residuo, Conradson: Residuum, 8.3 percent; crude, 2.7 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	6.2	0.676	77.8	
Total gasoline and naphtha	21.8	0.740	59.8	
Kerosine distillate	4.4	.812	42.8	
Gas oil	18.8	.846	35.8	
Nonviscous lubricating distillate	11.9	.862-.888	32.7-27.8	50-100
Medium lubricating distillate	6.2	.888-.899	27.8-25.9	100-200
Viscous lubricating distillate	5.4	.899-.907	25.9-24.4	Above 200
Residuum	29.4	.977	13.3	
Distillation loss	2.1			

Bureau of Mines Bartlesville Laboratory Item 22
Sample 68038

IDENTIFICATION

Farrud field
Mabruk 'A', Paleocene
3,245 - 3,277 feet

Africa
Libya
Tripolitania

GENERAL CHARACTERISTICS

Gravity, specific, 0.823 Gravity, ° API, 40.4 Pour point, ° F, 15
Sulfur, percent, 0.39 Color, greenish black
Viscosity, Saybolt Universal at 77°F, 38 sec.; 100°F, 35 sec. Nitrogen, percent, 0.070

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 746 mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	3.3	3.3	0.632	92.4					
2	167	3.7	7.0	.662	82.2	3.7	1.37453	127.1		
3	212	6.7	13.7	.707	68.6	15	1.39460	128.1		
4	257	8.1	21.8	.734	61.3	19	1.40217	127.9		
5	302	7.0	28.8	.759	54.9	23	1.42169	133.7		
6	347	6.4	35.2	.780	49.9	26	1.43324	138.3		
7	392	5.0	40.2	.799	45.6	29	1.44315	142.1		
8	437	4.8	45.0	.814	42.3	31	1.45208	145.2		
9	482	5.3	50.3	.827	39.6	31	1.45951	148.1		
10	527	5.1	55.4	.838	37.4	32	1.46576	154.2		

STAGE 2—Distillation continued at 40 mm. Hg

11	392	5.4	60.8	0.854	34.2	36	1.47347	159.1	41	15
12	437	6.2	67.0	.862	32.7	36	1.47752	160.6	48	40
13	482	4.8	71.8	.879	29.5	40	1.48668		66	65
14	527	3.4	75.2	.884	28.6	39			71	75
15	572	5.4	80.6	.894	26.8	41			78	100
Residuum		17.9	98.5	.963	15.4					

Carbon residuo, Conradson: Residuum, 7.9 percent; crude, 1.7 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	13.7	0.677	77.6	
Total gasoline and naphtha	40.2	0.734	61.2	
Kerosine distillate	4.8	.814	42.3	
Gas oil	19.5	.844	36.2	
Nonviscous lubricating distillate	16.1	.864-.900	32.3-25.7	50-100
Medium lubricating distillate	-	-	-	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	17.9	.963	15.4	
Distillation loss	1.5			

Bureau of Mines Bartlesville Laboratory Item 23
Sample 68035

IDENTIFICATION

Haram field
Tagrifet, Cretaceous
4,885 - 4,889 feet

Africa
Libya
Cyrenaica

GENERAL CHARACTERISTICS

Gravity, specific, 0.911 Gravity, ° API, 23.8 Pour point, ° F., 65
Sulfur, percent, 1.57 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 507 sec.; 130°F., 1,268 sec. Nitrogen, percent, 0.346

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 750 mm. Hg

First drop, 79 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167	0.9	0.9	0.675	78.1	-	1.37990	128.8		
3	212	1.2	2.1	.693	72.7	-8.5	1.38792	125.7		
4	257	2.2	4.3	.724	63.9	14	1.40324	126.7		
5	302	2.8	7.1	.746	58.2	17	1.41499	126.4		
6	347	2.8	9.9	.764	53.7	19	1.42411	126.5		
7	392	2.9	12.8	.781	49.7	21	1.43247	128.7		
8	437	3.6	16.4	.796	46.3	22	1.44095	130.9		
9	482	5.6	22.0	.810	43.2	23	1.44935	136.1		
10	527	7.2	29.2	.822	40.6	24	1.45679	143.3		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	1.3	30.5	0.846	35.8	32	1.46840	150.2	41	35
12	437	3.6	34.1	.855	34.0	32	1.47327	152.8	48	50
13	482	4.4	38.5	.862	31.3	36	1.47993	-	59	65
14	527	5.1	43.6	.884	28.6	39			84	75
15	572	6.6	50.2	.892	25.9	44			155	95
Residuum		47.6	97.8	1.015	7.9					

Carbon residue, Conradson: Residuum, 10.6 percent; crude, 5.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	2.1	0.685	75.0	
Total gasoline and naphtha	12.8	0.744	58.7	
Kerosine distillate	16.4	.812	42.7	
Gas oil	3.8	.851	34.8	
Nonviscous lubricating distillate	9.4	.858-.887	33.5-28.0	50-100
Medium lubricating distillate	7.8	.887-.907	28.0-24.4	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	47.6	1.015	7.9	
Distillation loss	2.2			

Bureau of Mines Bartlesville Laboratory Item 24
Sample 68029

IDENTIFICATION

Khuff field
Anf, Cretaceous
5,534 - 5,570 feet

Africa
Libya
Cyrenaica

GENERAL CHARACTERISTICS

Gravity, specific, 0.840 Gravity, ° API, 37.0 Pour point, ° F., 20
Sulfur, percent, 0.27 Color, greenish black
Viscosity, Saybolt Universal at 77°F., 49 sec.; 100°F., 44 sec. Nitrogen, percent, 0.125

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 754 mm. Hg

First drop, 75 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.6	2.6	0.629	93.5					
2	167	2.5	5.1	.665	81.3	5.1	1.38266	127.3		
3	212	4.3	9.4	.712	67.2	17	1.39779	126.0		
4	257	7.6	17.0	.741	59.5	22	1.41058	130.4		
5	302	5.2	22.2	.760	54.7	24	1.42160	132.7		
6	347	5.1	27.3	.778	50.4	25	1.43181	136.2		
7	392	4.3	31.6	.795	46.5	27	1.44020	137.8		
8	437	4.8	36.4	.805	44.3	26	1.44756	142.4		
9	482	5.2	41.6	.820	41.1	28	1.45470	143.4		
10	527	6.3	47.9	.829	39.2	28	1.46123	149.5		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	3.5	51.4	0.845	36.0	31	1.46877	153.7	40	30
12	437	7.0	58.4	.850	35.0	30	1.47327	155.2	47	60
13	482	4.8	63.2	.870	31.1	36			61	70
14	527	5.0	68.2	.877	29.8	36			85	75
15	572	5.9	74.1	.889	27.7	39			-	125
Residuum		25.8	99.9	.956	16.5					

Carbon residue, Conradson: Residuum, 7.2 percent; crude, 2.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.4	0.667	77.7	
Total gasoline and naphtha	31.6	0.738	60.2	
Kerosine distillate	10.0	.813	42.6	
Gas oil	14.6	.840	37.1	
Nonviscous lubricating distillate	10.8	.854-.880	34.1-29.3	50-100
Medium lubricating distillate	7.1	.880-.896	29.3-26.5	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	25.8	.956	16.5	
Distillation loss	0.1			

Bureau of Mines Bartlesville Laboratory Item 25
Sample 68137

Nafora field
Amal, Tertiary
9,874 feet

IDENTIFICATION

Africa
Libya
Cyrenaica

GENERAL CHARACTERISTICS

Gravity, specific, 0.856 Gravity, ° API, 33.8 Pour point, ° F., 70
Sulfur, percent, 0.02 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 121 sec.; 130°F, 69 sec. Nitrogen, percent, 0.064

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 113 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
1	122									
2	167	1.0	1.0	0.673	78.8	-	1.38227	130.3		
3	212	1.6	2.6	.703	69.8	13	1.39290	128.9		
4	257	3.0	5.6	.726	63.4	15	1.40520	129.8		
5	302	3.2	8.8	.743	58.9	16	1.41479	132.1		
6	347	3.6	12.4	.758	55.2	16	1.42256	131.6		
7	392	3.6	16.0	.770	52.3	15	1.42948	132.0		
8	437	4.0	20.0	.783	49.2	16	1.43606	134.2		
9	482	4.6	24.6	.796	46.3	17	1.44279	133.0		
10	527	5.0	29.6	.806	44.1	17	1.44878	133.8		

Stage 2—Distillation continued at 40 mm. Hg

11	392	4.0	33.6	0.825	40.0	22	1.45517	140.2	39	40
12	437	6.2	39.8	.830	39.0	20	1.45805	127.3	45	65
13	482	6.5	46.3	.837	37.6	20			55	75
14	527	6.7	53.0	.844	36.2	21			72	110
15	572	6.7	59.7	.852	34.6	21			-	130
Residuum		40.1	99.8	.930	20.7					

Carbon residue, Conradson: Residuum, 5.6 percent; crude, 2.4 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	2.6	0.691	73.1	
Total gasoline and naphtha	16.0	0.741	59.5	
Kerosene distillate	13.6	.796	46.3	
Gas oil	10.3	.828	39.4	
Nonviscous lubricating distillate	15.4	.834-.851	38.3-34.8	50-100
Medium lubricating distillate	4.4	.851-.856	34.8-33.8	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	40.1	.930	20.7	
Distillation loss	0.2			

Bureau of Mines Bartlesville Laboratory Item 26
Sample 68136

Nafora field
Bahi, Tertiary
9,774 - 9,996 feet

IDENTIFICATION

Africa
Libya
Cyrenaica

GENERAL CHARACTERISTICS

Gravity, specific, 0.857 Gravity, ° API, 33.6 Pour point, ° F., 70
Sulfur, percent, 0.13 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 122 sec.; 130°F, 68 sec. Nitrogen, percent, 0.070

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 124 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
1	122									
2	167	0.8	0.8	0.664	81.6	-	1.37616	129.4		
3	212	1.8	2.6	.704	69.5	14	1.39339	129.2		
4	257	2.8	5.4	.727	63.1	16	1.40574	129.6		
5	302	3.3	8.7	.742	59.2	15	1.41432	132.2		
6	347	3.4	12.1	.758	55.2	16	1.42258	135.5		
7	392	3.3	15.4	.771	52.0	16	1.42919	131.4		
8	437	4.0	19.4	.783	49.2	16	1.43561	132.2		
9	482	4.6	24.0	.796	46.3	17	1.44243	133.2		
10	527	5.0	29.0	.806	44.1	17	1.44839	135.2		

Stage 2—Distillation continued at 40 mm. Hg

11	392	5.0	34.0	0.824	40.2	21	1.45517	139.6	39	35
12	437	5.9	39.9	.831	38.8	21	1.45800	132.8	45	60
13	482	5.6	45.5	.840	37.0	22			55	70
14	527	6.5	52.0	.847	35.6	22			73	110
15	572	5.4	57.4	.857	33.6	24			-	130
Residuum		42.5	99.9	.928	21.0					

Carbon residue, Conradson: Residuum, 6.3 percent; crude, 2.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	2.6	0.692	73.1	
Total gasoline and naphtha	15.4	0.741	59.6	
Kerosene distillate	13.6	.796	46.3	
Gas oil	10.8	.828	39.4	
Nonviscous lubricating distillate	13.3	.836-.854	37.9-34.1	50-100
Medium lubricating distillate	4.3	.854-.862	34.1-32.7	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	42.5	.928	21.0	
Distillation loss	0.1			

Bureau of Mines Bartlesville Laboratory Item 27
Sample 68134

IDENTIFICATION

Nafoora field
Nafoora, Upper Eocene
2,159 - 2,273 feet

Africa
Libya
Cyrenaica

GENERAL CHARACTERISTICS

Gravity, specific, 0.853 Gravity, ° API, 34.4 Pour point, ° F., 30
Sulfur, percent, 0.94 Color, brownish black
Viscosity, Saybolt Universal at 77°F, 61 sec.; 100°F, 51 sec. Nitrogen, percent, 0.112

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 86 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	1.1	1.1	0.637	90.6					
2	167	2.5	3.6	.663	81.9	4.2	1.37353	127.7		
3	212	3.0	6.6	.701	70.4	12	1.39390	127.7		
4	257	4.8	11.4	.724	63.9	14	1.40428	124.9		
5	302	4.7	16.1	.747	57.9	17	1.41593	126.4		
6	347	4.7	20.8	.770	52.3	22	1.42742	131.5		
7	392	3.9	24.7	.789	47.8	24	1.43739	131.2		
8	437	4.6	29.3	.804	44.5	26	1.44502	135.3		
9	482	5.8	35.1	.818	41.5	27	1.45219	138.3		
10	527	5.9	41.0	.830	39.0	28	1.45940	142.6		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	4.5	45.5	0.855	34.0	36	1.46870	143.8	40	20
12	437	5.7	51.2	.861	32.8	35	1.47311	150.6	48	55
13	482	6.5	57.7	.876	30.0	39			62	70
14	527	5.0	62.7	.884	28.6	39			90	90
15	572	5.7	68.4	.894	26.8	41			155	120
Residuum		28.8	97.2	.949	14.5					

Carbon residue, Conradson: Residuum, 9.3 percent; crude, 3.0 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	6.6	0.676	77.8	
Total gasoline and naphtha	24.7	0.735	61.1	
Kerosine distillate	10.4	.812	42.8	
Gas oil	14.1	.846	35.8	
Nonviscous lubricating distillate	11.8	.863-.886	32.4-28.3	50-100
Medium lubricating distillate	7.4	.886-.899	28.3-25.8	100-200
Viscous lubricating distillate				Above 200
Residuum	28.8	.969	14.5	
Distillation loss	2.8			

Bureau of Mines Bartlesville Laboratory Item 28
Sample 68132

IDENTIFICATION

Nafoora field
Najah, Paleocene
5,421 feet

Africa
Libya
Cyrenaica

GENERAL CHARACTERISTICS

Gravity, specific, 0.829 Gravity, ° API, 39.2 Pour point, ° F., 35
Sulfur, percent, 0.49 Color, greenish black
Viscosity, Saybolt Universal at 77°F, 48 sec.; 100°F, 42 sec. Nitrogen, percent, 0.080

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 79 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.5	2.5	0.633	92.0					
2	167	2.4	4.9	.666	81.0	5.6	1.37968	126.9		
3	212	4.1	9.0	.700	70.6	12	1.39136	127.8		
4	257	5.9	14.9	.723	64.2	14	1.40416	125.7		
5	302	6.7	21.6	.745	58.4	17	1.41552	126.7		
6	347	4.9	26.2	.755	55.9	14	1.42576	134.1		
7	392	5.1	31.3	.781	49.7	21	1.43405	134.7		
8	437	5.5	36.8	.796	46.3	22	1.44115	133.2		
9	482	5.9	42.7	.808	43.6	22	1.44875	138.7		
10	527	5.8	48.5	.821	40.9	24	1.45611	142.6		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	6.5	55.0	0.839	37.2	28	1.46454	144.0	41	35
12	437	6.3	61.3	.849	35.2	29	1.46945	146.3	48	60
13	482	5.5	66.8	.862	32.7	32			61	75
14	527	5.6	72.4	.871	31.0	33			90	85
15	572	2.9	75.3	.882	28.9	36			120	100
Residuum		24.3	99.6	.946	18.1					

Carbon residue, Conradson: Residuum, 7.2 percent; crude, 2.0 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.0	0.672	79.0	
Total gasoline and naphtha	31.3	0.727	63.1	
Kerosine distillate	17.2	.809	43.5	
Gas oil	10.5	.842	36.5	
Nonviscous lubricating distillate	12.0	.851-.875	34.8-30.3	50-100
Medium lubricating distillate	4.3	.875-.886	30.3-28.3	100-200
Viscous lubricating distillate				Above 200
Residuum	24.3	.946	18.1	
Distillation loss	0.4			

1/ Distillation discontinued at 545°F.

Bureau of Mines Bartlesville Laboratory Item 29
Sample 68135

IDENTIFICATION

Nafara field
Tagrifet, Cretaceous
8,496 - 8,688 feet

Africa
Libya
Cyrenaica

GENERAL CHARACTERISTICS

Gravity, specific, 0.858 Gravity, ° API, 33.4 Pour point, ° F., 70
Sulfur, percent, 0.14 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 122 sec.; 130°F., 69 sec. Nitrogen, percent, 0.083

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 127 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122									
2	167	0.9	0.9	0.664	81.6	-	1.37363	131.7		
3	212	1.5	2.4	.697	71.5	10	1.39200	130.2		
4	257	2.8	5.2	.726	63.4	15	1.40490	129.2		
5	302	3.2	8.4	.743	58.9	16	1.41487	135.9		
6	347	3.4	11.8	.757	55.4	15	1.42227	132.1		
7	392	3.3	15.1	.770	52.3	15	1.42925	132.4		
8	437	4.1	19.2	.784	49.0	16	1.43575	133.5		
9	482	4.5	23.7	.797	46.0	17	1.44257	134.2		
10	527	4.5	28.2	.806	44.1	17	1.44883	135.2		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
11	392	4.3	32.5	0.823	40.4	21	1.45800	135.8	39	35
12	437	5.8	38.3	.829	39.2	20	1.45862	137.2	44	60
13	482	7.6	45.9	.840	37.0	22			57	75
14	527	6.6	52.5	.849	35.2	23			76	120
15	572	5.1	57.6	.860	33.0	25			-	130
Residuum		42.2	99.8	.935	19.8					

Carbon residue, Conradson: Residuum, 6.9 percent; crude, 3.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	2.4	0.685	75.2	
Total gasoline and naphtha	15.1	0.740	59.8	
Kerosine distillate	13.1	.796	46.3	
Gas oil	10.3	.827	39.6	
Nonviscous lubricating distillate	14.8	.834-.857	38.1-33.7	50-100
Medium lubricating distillate	4.3	.857-.865	33.7-32.1	100-200
Viscous lubricating distillate				Above 200
Residuum	42.2	.935	19.8	
Distillation loss	0.2			

Bureau of Mines Bartlesville Laboratory Item 30
Sample 68131

IDENTIFICATION

Nafara field
Tamef, Upper Eocene
2,257 feet

Africa
Libya
Cyrenaica

GENERAL CHARACTERISTICS

Gravity, specific, 0.873 Gravity, ° API, 30.6 Pour point, ° F., 55
Sulfur, percent, 1.01 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 157 sec.; 100°F., 69 sec. Nitrogen, percent, 0.129

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 95 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122									
2	167	1.4	1.4	0.645	87.9	-	1.36621	124.5		
3	212	1.3	2.7	.704	69.5	14	1.39248	123.7		
4	257	2.4	5.1	.730	62.3	17	1.40636	126.7		
5	302	3.3	8.4	.752	56.7	20	1.41812	124.9		
6	347	3.3	11.7	.775	51.1	24	1.42916	128.9		
7	392	3.6	15.3	.796	46.3	28	1.43902	129.7		
8	437	4.7	20.0	.810	43.2	29	1.44723	132.8		
9	482	5.5	25.5	.823	40.4	30	1.45413	132.2		
10	527	6.0	31.5	.831	38.8	29	1.45989	141.8		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
11	392	5.7	37.2	0.854	34.2	36	1.46838	137.7	41	20
12	437	8.0	45.2	.861	32.8	35	1.47278	147.7	48	50
13	482	6.9	52.1	.873	30.6	37			63	70
14	527	7.4	59.5	.886	28.2	40			105	100
15	572	4.5	64.0	.894	26.8	41			150	120
Residuum		33.8	97.8	.968	14.7					

Carbon residue, Conradson: Residuum, 9.4 percent; crude, 3.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	2.7	0.673	78.6	
Total gasoline and naphtha	15.3	0.750	57.2	
Kerosine distillate	10.2	.817	41.7	
Gas oil	16.7	.847	35.5	
Nonviscous lubricating distillate	12.8	.863-.884	32.5-28.5	50-100
Medium lubricating distillate	9.0	.884-.897	28.5-26.2	100-200
Viscous lubricating distillate				Above 200
Residuum	33.8	.968	14.7	
Distillation loss	2.2			

1/ Distillation discontinued at 545°F.

Bureau of Mines Bartlesville Laboratory Item 31
Sample 68133

IDENTIFICATION

Nafora field
Tarnet, Upper Eocene
3,049 feet

Africa
Libya
Cyrenaica

GENERAL CHARACTERISTICS

Gravity, specific, 0.847 Gravity, ° API, 35.6 Pour point, ° F., 25
Sulfur, percent, 1.04 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 56 sec.; 100°F., 46 sec. Nitrogen, percent, 0.102

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.5	2.5	0.633	92.0					
2	167	2.6	5.1	.663	81.9	4.2	1.37375	127.2		
3	212	4.0	9.1	.701	70.4	12	1.39178	126.9		
4	257	5.5	14.6	.725	63.7	15	1.40559	127.1		
5	302	4.7	19.3	.750	57.2	19	1.41803	129.6		
6	347	4.8	24.1	.772	51.8	22	1.42939	134.0		
7	392	4.1	28.2	.791	47.4	25	1.43874	132.7		
8	437	4.8	33.0	.805	44.3	26	1.44599	136.0		
9	482	5.9	38.9	.818	41.5	27	1.45280	139.4		
10	527	5.7	44.6	.830	39.0	28	1.46041	141.8		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	3.7	48.3	0.854	34.2	36	1.46977	146.0	41	25
12	437	7.0	55.3	.861	32.8	35	1.47363	146.6	48	60
13	482	6.0	61.3	.873	30.6	37			62	80
14	527	5.2	66.5	.884	28.6	39			91	95
15	572	5.8	72.3	.897	26.2	43			165	105
Residuum		26.2	98.5	.970	14.4					

Carbon residue, Conradson: Residuum, 8.9 percent; crude, 2.7 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.1	0.671	79.2	
Total gasoline and naphtha	28.2	0.729	62.5	
Kerosine distillate	10.7	.812	42.7	
Gas oil	13.8	.846	35.8	
Nonviscous lubricating distillate	11.9	.863-.886	32.5-28.3	50-100
Medium lubricating distillate	7.4	.886-.903	28.3-25.2	100-200
Viscous lubricating distillate	0.3	.903-.904	25.2-25.1	Above 200
Residuum	26.2	.970	14.4	
Distillation loss	1.5			

Bureau of Mines Bartlesville Laboratory Item 32
Sample 68039

IDENTIFICATION

Ora field
Lidam, Cretaceous
8,948 - 8,960 feet

Africa
Libya
Cyrenaica

GENERAL CHARACTERISTICS

Gravity, specific, 0.856 Gravity, ° API, 33.8 Pour point, ° F., 45
Sulfur, percent, 0.18 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 70 sec.; 100°F., 54 sec. Nitrogen, percent, 0.074

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 746 mm. Hg
First drop, 97 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167	0.6	0.6	0.682	76.0		1.38295	134.4		
3	212	1.3	1.9	.711	67.5	17	1.39749	131.3		
4	257	2.6	4.5	.735	61.0	19	1.40952	133.2		
5	302	3.6	8.1	.755	55.9	21	1.42058	134.1		
6	347	5.2	13.3	.773	51.6	23	1.43010	136.3		
7	392	5.6	18.9	.789	47.8	24	1.43823	139.1		
8	437	5.1	24.0	.801	45.2	24	1.44535	139.8		
9	482	6.4	30.4	.813	42.5	25	1.45228	144.0		
10	527	6.1	36.5	.825	40.0	26	1.45892	148.4		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	6.3	42.8	0.843	36.4	30	1.46661	149.0	41	20
12	437	7.1	49.9	.851	34.8	30	1.47050	151.2	47	40
13	482	6.8	56.7	.863	32.5	33	1.47752		61	65
14	527	6.2	62.9	.874	30.4	35			89	80
15	572	7.3	70.2	.883	28.7	36			150	95
Residuum		29.2	92.4	.945	18.2					

Carbon residue, Conradson: Residuum, 6.8 percent; crude, 2.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	1.9	0.702	70.1	
Total gasoline and naphtha	18.9	0.762	54.2	
Kerosine distillate	17.6	.814	42.4	
Gas oil	11.3	.846	35.7	
Nonviscous lubricating distillate	13.2	.854-.876	34.3-30.1	50-100
Medium lubricating distillate	9.2	.876-.888	30.1-27.9	100-200
Viscous lubricating distillate				Above 200
Residuum	29.2	.945	18.2	
Distillation loss	0.6			

Bureau of Mines Bartlesville Laboratory Item 33
Sample 68055

IDENTIFICATION

Sarir field
Cretaceous

Africa
Libya
Cyrenaica

GENERAL CHARACTERISTICS

Gravity, specific, 0.840 Gravity, ° API, 37.0 Pour point, ° F., 70
Sulfur, percent, 0.15 Color, brownish black
Viscosity, Saybolt Universal at 77°F, 108 sec.; 100°F, 62 sec. Nitrogen, percent, 0.076

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STATION 1—Distillation at atmospheric pressure, 746 mm. Hg
First drop, 79 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.7	2.7	0.634	91.7					
2	167	2.3	5.0	.663	81.9	4.2	1.38853	134.5		
3	212	3.5	8.5	.706	68.9	15	1.39574	129.8		
4	257	4.9	13.4	.731	62.1	17	1.40831	130.4		
5	302	4.4	17.8	.750	57.2	19	1.41867	132.2		
6	347	3.9	21.7	.766	53.2	20	1.42716	134.5		
7	392	3.2	24.9	.778	50.4	19	1.43315	136.1		
8	437	4.3	29.2	.789	47.8	19	1.43902	134.8		
9	482	4.7	33.9	.800	45.4	19	1.44537	137.6		
10	527	4.3	38.2	.809	43.4	18	1.45083	142.2		

STATION 2—Distillation continued at 40 mm. Hg

11	392	5.5	43.7	0.826	39.8	22	1.45735	142.2	40	45
12	437	6.3	50.0	.833	38.4	22	1.46096	143.2	46	65
13	482	5.3	55.3	.845	36.0	24			55	75
14	527	5.7	61.0	.856	33.8	26			72	105
15	572	7.5	68.5	.864	32.3	27			125	115
Residuum		30.2	98.7	.956	16.5					

Carbon residue, Conradson: Residuum, 8.4 percent; crude, 2.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.5	0.671	79.2	
Total gasoline and naphtha	24.9	0.726	63.5	
Kerosine distillate	13.3	.799	45.5	
Gas oil	11.2	.830	39.1	
Nonviscous lubricating distillate	12.2	.838-.860	37.3-33.0	50-100
Medium lubricating distillate	6.9	.860-.869	33.0-31.4	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	30.2	.956	16.5	
Distillation loss	1.3			

Bureau of Mines Bartlesville Laboratory Item 34
Sample 68053

IDENTIFICATION

Sarir field
Cretaceous
7,746 - 8,092 feet

Africa
Libya
Cyrenaica

GENERAL CHARACTERISTICS

Gravity, specific, 0.847 Gravity, ° API, 35.6 Pour point, ° F., 70
Sulfur, percent, 0.18 Color, brownish black
Viscosity, Saybolt Universal at 77°F, 3,988 sec.; 100°F, 60 sec. Nitrogen, percent, 0.086

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STATION 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 81 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	1.5	1.5	0.629	93.5					
2	167	2.1	3.6	.663	81.9	4.2	1.37328	128.6		
3	212	3.4	7.0	.704	69.5	14	1.39634	131.3		
4	257	4.5	11.5	.730	62.3	17	1.40846	130.2		
5	302	4.3	15.8	.742	57.4	18	1.41788	131.8		
6	347	4.2	20.0	.765	53.5	19	1.42653	132.6		
7	392	3.6	23.6	.778	50.4	19	1.43315	133.9		
8	437	4.8	28.4	.790	47.6	19	1.43946	135.8		
9	482	4.5	32.9	.800	45.4	19	1.44571	138.2		
10	527	4.6	37.5	.809	43.4	18	1.45083	140.8		

STATION 2—Distillation continued at 40 mm. Hg

11	392	4.8	42.3	0.825	40.0	22	1.45708	141.3	39	30
12	437	5.6	47.9	.834	38.2	22	1.45989	141.3	44	50
13	482	5.4	53.3	.840	37.0	22			53	70
14	527	5.9	59.2	.848	35.4	22			69	95
15	572	7.1	66.3	.854	34.2	22			175	110
Residuum		33.2	99.5	.954	16.8					

Carbon residue, Conradson: Residuum, 7.6 percent; crude, 2.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	7.0	0.676	77.9	
Total gasoline and naphtha	23.6	0.731	62.1	
Kerosine distillate	13.9	.800	45.5	
Gas oil	11.3	.830	38.9	
Nonviscous lubricating distillate	9.4	.838-.850	37.4-35.0	50-100
Medium lubricating distillate	6.1	.850-.855	35.0-33.9	100-200
Viscous lubricating distillate	2.0	.855-.857	33.9-33.6	Above 200
Residuum	33.2	.954	16.8	
Distillation loss	0.5			

Bureau of Mines Bartlesville Laboratory
Sample 68054

Item 35

Sarir field
Cretaceous
8,030 - 8,296 feet

IDENTIFICATION

Africa
Libya
Cyrenaica

GENERAL CHARACTERISTICS

Gravity, specific, 0.832 Gravity, ° API, 38.6 Pour point, ° F., 60
Sulfur, percent, 0.16 Color, brownish black
Viscosity, Saybolt Universal at 77°F. 54 sec., 100°F. 45 sec. Nitrogen, percent, 0.074

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 746 mm. Hg

First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.7	2.7	0.657	83.9					
2	167	2.5	5.2	.669	80.0	7.0	1.38505	132.5		
3	212	4.5	9.7	.710	67.8	17	1.39821	129.2		
4	257	5.6	15.3	.734	61.3	19	1.40924	130.6		
5	302	5.3	20.6	.755	55.9	21	1.42122	134.6		
6	347	4.9	25.5	.771	52.0	22	1.42979	136.5		
7	392	3.9	29.4	.785	48.8	22	1.43688	136.5		
8	437	4.5	33.9	.796	46.3	22	1.44293	140.4		
9	482	4.9	38.8	.807	43.8	22	1.44941	140.7		
10	527	5.2	44.0	.817	41.7	22	1.45525	143.3		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	4.2	48.2	0.834	38.2	26	1.46128	145.3	40	35
12	437	6.6	54.8	.841	36.8	26	1.46502	148.0	46	55
13	482	5.4	60.2	.853	34.4	28	1.47166	148.8	56	65
14	527	5.1	65.3	.863	32.5	30			77	90
15	572	6.4	71.7	.874	30.4	32			125	105
Residuum		26.2	97.9	.951	17.3					

Carbon residue, Conradson: Residuum, 6.9 percent; crude, 2.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.7	0.685	75.2	
Total gasoline and naphtha	29.4	0.734	61.2	
Kerosine distillate	14.6	.807	43.8	
Gas oil	9.9	.838	37.4	
Nonviscous lubricating distillate	11.6	.846-.868	35.8-31.5	50-100
Medium lubricating distillate	6.2	.868-.880	31.5-29.3	100-200
Viscous lubricating distillate				Above 200
Residuum	26.2	.951	17.3	
Distillation loss	2.1			

Bureau of Mines Bartlesville Laboratory
Sample 68024

Item 36

Umm Farud field
Bucharma 'B' and Dahra 'B', Paleocene
2,700 - 3,113 feet

IDENTIFICATION

Africa
Libya
Tripolitania

GENERAL CHARACTERISTICS

Gravity, specific, 0.808 Gravity, ° API, 43.6 Pour point, ° F., 20
Sulfur, percent, 0.13 Color, greenish black
Viscosity, Saybolt Universal at 77°F. 36 sec., 100°F. 35 sec. Nitrogen, percent, 0.033

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg

First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.1	2.1	0.634	91.7					
2	167	4.1	6.2	.671	79.4	8.0	1.37799	125.1		
3	212	7.5	13.7	.710	67.8	17	1.39676	126.4		
4	257	9.1	22.8	.735	61.0	19	1.40940	127.1		
5	302	7.8	30.6	.755	55.9	21	1.41977	133.2		
6	347	8.1	38.7	.772	51.8	22	1.43030	137.2		
7	392	7.0	45.7	.791	47.4	25	1.43939	140.8		
8	437	6.2	51.9	.807	43.8	27	1.44812	144.2		
9	482	6.5	58.4	.821	40.9	29	1.45611	149.7		
10	527	6.2	64.6	.833	38.4	30	1.46302	154.2		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	5.4	70.0	0.844	36.2	31	1.47050	156.1	41	40
12	437	6.4	76.4	.858	33.4	34	1.47509	156.1	48	55
13	482	3.7	80.1	.871	31.0	36			58	75
14	527	4.0	84.1	.881	29.1	38			78	100
15	572	4.4	88.5	.889	27.7	39			140	115
Residuum		11.0	99.5	.955	16.7					

Carbon residue, Conradson: Residuum, 6.8 percent; crude, 0.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	13.7	0.687	74.6	
Total gasoline and naphtha	45.7	0.739	60.0	
Kerosine distillate	12.7	.814	42.3	
Gas oil	15.8	.843	36.4	
Nonviscous lubricating distillate	9.4	.861-.884	32.9-28.6	50-100
Medium lubricating distillate	4.9	.884-.893	28.6-26.9	100-200
Viscous lubricating distillate				Above 200
Residuum	11.0	.955	16.7	
Distillation loss	0.5			

Bureau of Mines Bartlesville Laboratory Item 37
Sample 57033

IDENTIFICATION

Bled Khatara field
Liassic, Jurassic

Africa
Morocco

GENERAL CHARACTERISTICS

Gravity, specific, ... 0.825 Gravity, ° API, ... 40.0 Pour point, ° F, ... 45
Sulfur, percent, less than 0.10 Color, ... greenish black
Viscosity, Saybolt Universal at 100°F, 43 sec. Nitrogen, percent, ... 0.083

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, ... 738 mm. Hg
First drop, ... 113 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122									
2	167	1.0	1.0	0.665	81.3	-	1.37147	122.1		
3	212	1.9	2.9	.700	70.6	12	1.38347	122.1		
4	257	4.4	7.3	.713	67.0	8.9	1.39330	120.9		
5	302	6.2	13.5	.732	61.8	10	1.40864	122.0		
6	347	6.4	19.9	.952	56.7	13	1.41820	127.2		
7	392	7.2	27.1	.767	53.0	14	1.42696	124.0		
8	437	6.3	33.4	.784	49.0	16	1.43514	124.7		
9	482	7.7	41.1	.798	45.8	18	1.44243	125.3		
10	527	8.1	49.2	.812	42.8	20	1.45041	129.6		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
11	392	6.3	55.5	0.833	38.4	26	1.46608	144.7	40	25
12	437	7.5	63.0	.838	37.4	24	1.46468	148.2	46	45
13	482	6.1	69.1	.848	35.4	26	1.47524	146.7	56	65
14	527	5.7	74.8	.863	32.5	30			75	80
15	572	6.7	81.5	.874	30.4	32			105	95
Residuum		17.9	99.4	.947	17.9					

Carbon residue, Conradson: Residuum, .8.5 percent; crude, .1.7 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	2.9	0.688	74.2	
Total gasoline and naphtha	27.1	0.738	60.2	
Kerosine distillate	22.1	.780	49.9	
Gas oil	12.8	.837	37.6	
Nonviscous lubricating distillate	15.1	.842-.970	36.6-31.1	50-100
Medium lubricating distillate	4.4	.870-.880	31.1-29.0	100-200
Viscous lubricating distillate				Above 200
Residuum	17.9	.947	17.9	
Distillation loss	0.6			

Bureau of Mines Bartlesville Laboratory Item 38
Sample 68062

IDENTIFICATION

Delta field
Miocene
5,642 - 5,841 feet

Africa
Nigeria
Offshore

GENERAL CHARACTERISTICS

Gravity, specific, ... 0.871 Gravity, ° API, ... 31.0 Pour point, ° F, ... below 5
Sulfur, percent, ... 0.18 Color, ... dark green
Viscosity, Saybolt Universal at 77°F, 56 sec.; 100°F, 51 sec. Nitrogen, percent, ... 0.096

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, ... 731 mm. Hg
First drop, ... 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122	0.9	0.9	0.652	85.5					
2	167	1.3	2.2	.681	76.3	13	1.38014	125.1		
3	212	4.1	6.3	.735	61.0	28	1.40656	128.1		
4	257	4.3	10.6	.760	54.7	31	1.41995	132.3		
5	302	4.9	15.4	.784	49.0	35	1.43394	139.0		
6	347	4.3	19.7	.805	44.3	38	1.44591	144.8		
7	392	4.4	24.1	.823	40.4	40	1.45470	144.9		
8	437	5.5	29.6	.837	37.6	41	1.46219	147.1		
9	482	7.4	37.0	.851	34.8	43	1.47009	152.3		
10	527	6.8	43.8	.864	32.3	44	1.47777	158.1		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
11	392	6.6	50.4	0.879	29.5	47	1.48466	159.0	45	Below 5
12	437	6.6	57.0	.888	27.8	48	1.48888	162.4	55	do.
13	482	5.8	62.8	.906	24.7	53	1.49639	-	79	30
14	527	5.9	68.7	.914	23.3	54			165	55
15	572	6.2	74.9	.922	22.0	54			500	75
Residuum		23.8	98.7	.958	16.2					

Carbon residue, Conradson: Residuum, .4.7 percent; crude, .1.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	6.3	0.712	67.2	
Total gasoline and naphtha	24.1	0.772	51.8	
Kerosine distillate		.858	33.3	
Gas oil	26.3			
Nonviscous lubricating distillate	10.2	.884-.908	28.7-24.3	50-100
Medium lubricating distillate	5.1	.908-.915	24.3-23.2	100-200
Viscous lubricating distillate	8.5	.915-.926	23.2-21.3	Above 200
Residuum	23.8	.958	16.2	
Distillation loss	1.3			

Bureau of Mines Bartlesville Laboratory Item 39
Sample 68043

IDENTIFICATION

Kanuskiri field
Miocene
6,027 - 6,030 feet

Africa
Nigeria
Offshore

GENERAL CHARACTERISTICS

Gravity, specific, 0.914 Gravity, ° API, 23.3 Pour point, ° F, 65
Sulfur, percent, 0.17 Color, brownish green
Viscosity, Saybolt Universal at 77°F, 243 sec.; 100°F, 88 sec. Nitrogen, percent, 0.099

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 748 mm. Hg
First drop, 306 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	257									
5	302	1.0	1.0	0.801	45.2	-	1.43815	126.2		
6	347	1.9	2.9	.826	39.8	42	1.44886	126.4		
7	392	3.1	6.0	.844	36.2	45	1.45908	130.0		
8	437	5.7	11.7	.860	33.0	47	1.46803	134.5		
9	482	7.2	18.9	.867	31.7	46	1.47353	140.4		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
11	392	12.5	31.4	0.875	30.2	45	1.48003	148.3	44	15
12	437	13.3	44.7	.885	28.4	46	1.48632	160.6	55	40
13	482	11.5	56.2	.900	25.7	50	1.49766	-	82	65
14	527	6.2	62.4	.914	23.3	54			145	100
15	572	10.3	72.7	.927	21.1	57			180	110
Residuum		26.8	99.5	.989	11.6					

Carbon residue, Conradson: Residuum, 5.3 percent; crude, 1.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha	2.9	0.817	41.6	
Kerosine distillate				
Gas oil	29.3	.867	31.7	
Nonviscous lubricating distillate	20.8	.880-.904	29.2-25.0	50-100
Medium lubricating distillate	19.3	.904-.934	25.0-19.9	100-200
Viscous lubricating distillate	4	.934-.935	19.9-19.8	Above 200
Residuum	26.8	.989	11.6	
Distillation loss	0.5			

Bureau of Mines Bartlesville Laboratory Item 40
Sample 68044

IDENTIFICATION

Kanuskiri field
Miocene
5,819 - 5,857 feet

Africa
Nigeria
Offshore

GENERAL CHARACTERISTICS

Gravity, specific, 0.925 Gravity, ° API, 21.5 Pour point, ° F, 30
Sulfur, percent, 0.19 Color, greenish black
Viscosity, Saybolt Universal at 100°F, 137 sec.; 130°F, 74 sec. Nitrogen, percent, 0.105

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 746 mm. Hg
First drop, 140 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	257									
5	302									
6	347	1.0	1.0	0.804	44.5	-	1.43727	129.1		
7	392	1.4	2.4	.827	39.6	42	1.45083	128.2		
8	437	2.9	5.3	.848	35.4	47	1.46019	128.0		
9	482	5.7	11.0	.862	32.7	48	1.46835	127.3		
10	527	7.1	18.1	.872	30.8	48	1.47467	137.0		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
11	392	11.8	29.9	0.885	28.4	50	1.48314	147.5	45	Below 5
12	437	12.9	42.8	.898	26.1	53	1.49157	158.7	58	30
13	482	9.9	52.7	.917	22.8	58	1.50439	-	83	55
14	527	8.7	61.4	.932	20.3	62			200	75
15	572	10.3	71.7	.944	18.4	65			635	95
Residuum		27.8	99.5	.998	10.3					

Carbon residue, Conradson: Residuum, 6.2 percent; crude, 1.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha	2.4	0.817	41.6	
Kerosine distillate				
Gas oil	26.3	.872	30.7	
Nonviscous lubricating distillate	20.4	.890-.919	27.5-22.4	50-100
Medium lubricating distillate	7.9	.919-.932	22.4-20.3	100-200
Viscous lubricating distillate	14.7	.932-.951	20.3-17.4	Above 200
Residuum	27.8	.998	10.3	
Distillation loss	0.5			

Bureau of Mines Bartlesville Laboratory Item 41
Sample 68064

IDENTIFICATION

Ke field
Miocene
10,370 - 10,570 feet

Africa
Nigeria
Eastern Region

GENERAL CHARACTERISTICS

Gravity, specific, 0.809 Gravity, ° API, 43.4 Pour point, ° F., 45
Sulfur, percent, 0.05 Color, green
Viscosity, Saybolt Universal at 77°F, 34 sec.; 100°F, 34 sec. Nitrogen, percent, 0.012

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure. mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index. n _D at 20° C.	Specific dispersion	S. U. vis. 100° F.	Cloud test. ° F.
1	122	1.6	1.6	0.636	91.0					
2	167	3.3	4.9	.676	77.8	10	1.37953	129.1		
3	212	7.0	11.9	.722	64.5	22	1.40291	135.0		
4	257	7.9	19.8	.748	57.7	26	1.41692	140.9		
5	302	8.1	27.9	.765	53.5	26	1.42825	148.0		
6	347	7.1	35.0	.778	50.4	25	1.43542	148.5		
7	392	5.6	40.6	.789	47.8	24	1.44031	144.3		
8	437	6.4	47.0	.801	45.2	24	1.44665	145.4		
9	482	7.7	54.7	.818	41.5	27	1.45568	152.1		
10	527	7.7	62.4	.834	38.2	30	1.46470	155.3		

Stage 2—Distillation continued at 40 mm. Hg

11	592	10.6	73.0	0.850	35.0	34	1.47145	155.3	42	30
12	437	6.2	79.2	.858	33.4	34	1.47311	151.9	50	60
13	482	5.3	84.5	.866	31.2	34			60	75
14	527	3.2	87.7	.874	30.4	35			77	85
15	572									
Residuum		11.4	99.1	.929	20.8					

Carbon residue, Conradson: Residuum, 1.0 percent; crude, 0.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	11.9	0.698	71.3	
Total gasoline and naphtha	40.6	0.748	57.8	
Kerosine distillate	14.1	.810	43.1	
Gas oil	21.4	.845	35.9	
Nonviscous lubricating distillate	11.6	.858-.877	33.4-29.8	50-100
Medium lubricating distillate	-	-	-	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	11.4	.929	20.8	
Distillation loss	0.9			

1/ Distillation discontinued at 504°F.

Bureau of Mines Bartlesville Laboratory Item 42
Sample 68068

IDENTIFICATION

Meji field
Miocene
9,049 - 9,980 feet

Africa
Nigeria
Offshore

GENERAL CHARACTERISTICS

Gravity, specific, 0.840 Gravity, ° API, 37.0 Pour point, ° F., 25
Sulfur, percent, 0.15 Color, brownish green
Viscosity, Saybolt Universal at 77°F, 37 sec.; 100°F, 35 sec. Nitrogen, percent, 0.041

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure. mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index. n _D at 20° C.	Specific dispersion	S. U. vis. 100° F.	Cloud test. ° F.
1	122	1.8	1.8	0.642	88.9					
2	167	2.6	4.4	.681	76.3	13	1.38662	130.3		
3	212	6.0	10.4	.731	62.1	26	1.40840	138.2		
4	257	6.6	17.0	.757	55.4	30	1.42140	144.1		
5	302	6.6	23.6	.777	50.6	32	1.43355	152.0		
6	347	5.7	29.3	.791	47.4	31	1.44059	153.1		
7	392	4.8	34.1	.800	45.4	30	1.44466	148.6		
8	437	6.3	40.4	.811	43.0	29	1.45252	154.2		
9	482	8.7	49.1	.832	38.6	34	1.46555	163.1		
10	527	8.7	57.8	.852	34.6	39	1.47587	170.4		

Stage 2—Distillation continued at 40 mm. Hg

11	592	15.3	73.1	0.863	32.5	40	1.48187	173.8	45	45
12	437	1.9	75.0	.877	29.8	43	1.48928	-	53	55
13	482	1.8	76.8	.882	28.9	42			60	65
14	527	4.6	81.4	.890	27.5	42			77	80
15	572									
Residuum		18.1	99.5	.976	13.5					

Carbon residue, Conradson: Residuum, 4.9 percent; crude, 1.0 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	10.4	0.703	69.8	
Total gasoline and naphtha	34.1	0.756	55.6	
Kerosine distillate	6.3	.811	43.0	
Gas oil	30.4	.850	34.9	
Nonviscous lubricating distillate	10.6	.872-.896	30.8-26.5	50-100
Medium lubricating distillate	-	-	-	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	18.1	.976	13.5	
Distillation loss	0.5			

1/ Distillation discontinued at 509°F.

Bureau of Mines Bartlesville Laboratory Item 43
Sample 68065

IDENTIFICATION

Meren field
Miocene

Africa
Nigeria
Offshore

GENERAL CHARACTERISTICS

Gravity, specific, 0.828 Gravity, ° API, 39.4 Pour point, ° F., 25
Sulfur, percent, 0.09 Color, dark green
Viscosity, Saybolt Universal at 77°F., 37 sec.; 100°F., 36 sec. Nitrogen, percent, 0.048

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STRAK 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.2	2.2	0.640	89.6					
2	167	2.9	5.1	.680	76.6	12	1.38174	130.7		
3	212	6.1	11.2	.732	61.8	27	1.40905	138.2		
4	257	8.7	19.9	.760	54.7	31	1.42376	146.0		
5	302	7.2	27.1	.779	50.1	33	1.43480	154.7		
6	347	6.5	33.6	.792	47.2	32	1.44187	152.4		
7	392	5.8	39.4	.800	45.4	30	1.44621	150.8		
8	437	6.3	45.7	.811	43.0	29	1.45255	151.8		
9	482	7.5	53.2	.830	39.0	33	1.46219	156.9		
10	527	7.5	60.7	.845	36.0	35	1.47093	162.4		

STRAK 2—Distillation continued at 40 mm. Hg

11	392	6.0	66.7	0.863	32.5	40	1.47803	164.5	41	20
12	437	6.1	72.8	.868	31.5	38	1.47957	162.5	47	45
13	482	4.9	77.7	.876	30.0	39	1.48511	-	58	65
14	527	4.2	81.9	.884	28.6	39			83	95
15	572	4.8	86.7	.893	27.0	41			155	110
Residuum		12.2	98.9	.974	13.8					

Carbon residue, Conradson: Residuum, 7.1 percent; crude, 1.0 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	11.2	0.700	70.5	
Total gasoline and naphtha	39.4	0.758	55.2	
Kerosine distillate	6.3	.811	43.0	
Gas oil	25.6	.849	35.2	
Nonviscous lubricating distillate	9.6	.870-.886	31.1-28.2	50-100
Medium lubricating distillate	5.8	.886-.898	28.2-26.1	100-200
Viscous lubricating distillate				Above 200
Residuum	12.2	.974	13.8	
Distillation loss	1.1			

Bureau of Mines Bartlesville Laboratory Item 44
Sample 68067

IDENTIFICATION

Meta field
Miocene

Africa
Nigeria
Offshore

GENERAL CHARACTERISTICS

Gravity, specific, 0.867 Gravity, ° API, 31.7 Pour point, ° F., 10
Sulfur, percent, 0.86 Color, green
Viscosity, Saybolt Universal at 100°F., 533 sec.; 130°F., 256 sec. Nitrogen, percent, 0.013

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STRAK 1—Distillation at atmospheric pressure, 740 mm. Hg
First drop, 334 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	257									
5	302									
6	347									
7	392	2.6	2.6	0.770	52.3	-	1.43315	146.6		
8	437	6.4	9.0	.773	51.6	11	1.43688	154.0		
9	482	6.3	15.3	.793	46.8	15	1.45006	153.4		
10	527	7.4	22.7	.814	42.3	21	1.45724	159.5		

STRAK 2—Distillation continued at 40 mm. Hg

11	392	1.5	24.2	0.852	34.6	35	1.47566	156.7	40	10
12	437	2.2	26.4	.862	32.7	36	1.48060	-	46	20
13	482	3.7	30.1	.873	30.6	37			56	25
14	527	5.2	35.3	.878	29.7	37			81	35
15	572	11.2	46.5	.883	28.7	36			-	45
Residuum		52.9	99.4	.896	26.4					

Carbon residue, Conradson: Residuum, 0.4 percent; crude, 0.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha	2.6	0.770	52.3	
Kerosine distillate	20.1	.794	46.6	
Gas oil	3.8	.858	33.4	
Nonviscous lubricating distillate	6.4	.866-.878	31.8-29.6	50-100
Medium lubricating distillate	1.0	.878-.879	29.6-29.5	100-200
Viscous lubricating distillate	12.6	.879-.886	29.5-28.1	Above 200
Residuum	52.9	.896	26.4	
Distillation loss	0.6			

Bureau of Mines Bartlesville Laboratory Item 45
Sample 68061

IDENTIFICATION

Obagi field
Miocene
6,850 - 8,750 feet

Africa
Nigeria
Eastern Region

GENERAL CHARACTERISTICS

Gravity, specific, 0.897 Gravity, ° API, 26.2 Pour point, ° F., below 5
Sulfur, percent, 0.21 Color, brownish green
Viscosity, Saybolt Universal at 77°F, 65 sec.; 100°F, 53 sec. Nitrogen, percent, 0.060

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 732 mm. Hg
First drop, 131 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
1	122									
2	167	1.3	1.3	0.700	70.6	-	1.39163	127.1		
3	212	2.6	3.9	.745	58.4	33	1.41364	129.6		
4	257	1.6	5.5	.772	50.1	40	1.43029	146.6		
5	302	2.9	8.4	.807	43.8	46	1.45165	168.9		
6	347	3.3	11.7	.821	40.9	46	1.45735	162.7		
7	392	3.6	15.3	.834	38.2	46	1.46190	155.1		
8	437	5.5	20.8	.854	34.2	50	1.47077	157.9		
9	482	9.3	30.1	.872	30.8	53	1.48213	167.3		
10	527	9.5	39.6	.885	28.4	54	1.49097	173.3		

Stage 2—Distillation continued at 40 mm. Hg

11	392	7.4	47.0	0.898	26.1	56	1.49652	173.4	43	Below 5
12	437	11.3	58.3	.905	24.9	56	1.50052	181.6	53	do.
13	482	7.5	65.8	.913	23.5	56	1.51003	-	78	40
14	527	7.1	72.9	.928	21.0	60			150	60
15	572	5.6	78.5	.936	19.7	61			335	85
Residuum		21.4	99.9	.970	14.4					

Carbon residue, Conradson: Residuum, 4.2 percent; crude, 1.0 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	3.9	0.730	62.3	
Total gasoline and naphtha	15.3	0.794	46.8	
Kerosine distillate	-	-	-	
Gas oil	34.6	.881	29.2	
Nonviscous lubricating distillate	14.4	.903-.918	25.2-22.7	50-100
Medium lubricating distillate	6.8	.918-.930	22.7-20.6	100-200
Viscous lubricating distillate	7.4	.930-.940	20.6-19.1	Above 200
Residuum	21.4	.970	14.4	
Distillation loss	0.1			

Bureau of Mines Bartlesville Laboratory Item 46
Sample 68066

IDENTIFICATION

Robertkiri field
Miocene
11,540 - 11,720 feet

Africa
Nigeria
Eastern Region

GENERAL CHARACTERISTICS

Gravity, specific, 0.833 Gravity, ° API, 38.4 Pour point, ° F., 25
Sulfur, percent, 0.12 Color, dark green
Viscosity, Saybolt Universal at 77°F, 39 sec.; 100°F, 37 sec. Nitrogen, percent, 0.054

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 747 mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
1	122	2.1	2.1	0.656	84.2					
2	167	2.2	4.3	.685	75.1	15	1.39327	132.8		
3	212	5.5	9.8	.727	63.1	25	1.40668	132.9		
4	257	8.9	16.7	.754	56.2	28	1.41243	138.7		
5	302	6.3	23.0	.774	51.3	30	1.43087	144.3		
6	347	4.8	27.8	.788	48.1	30	1.43896	146.8		
7	392	4.5	32.3	.800	45.4	30	1.44493	144.5		
8	437	5.9	38.2	.814	42.3	31	1.45187	146.8		
9	482	7.0	45.2	.828	39.4	32	1.46043	152.2		
10	527	6.7	51.9	.843	36.4	34	1.46824	155.9		

Stage 2—Distillation continued at 40 mm. Hg

11	392	8.0	59.9	0.855	34.0	36	1.47555	159.9	42	25
12	437	5.9	65.8	.865	32.1	37	1.47936	158.2	49	45
13	482	6.5	72.3	.881	29.1	41			64	70
14	527	4.4	76.7	.890	27.5	42			94	85
15	572	6.4	83.1	.901	25.5	45			205	105
Residuum		13.5	96.6	.976	13.5					

Carbon residue, Conradson: Residuum, 6.9 percent; crude, 1.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.8	0.702	70.0	
Total gasoline and naphtha	32.3	0.754	56.2	
Kerosine distillate	5.9	.814	42.3	
Gas oil	25.1	.845	35.9	
Nonviscous lubricating distillate	11.5	.866-.891	31.9-27.4	50-100
Medium lubricating distillate	4.9	.891-.901	27.4-25.6	100-200
Viscous lubricating distillate	3.4	.901-.908	25.6-24.4	Above 200
Residuum	13.5	.976	13.5	
Distillation loss	3.4			

Bureau of Mines Bartlesville Laboratory Item 47
Sample 68063

IDENTIFICATION

Tubu field
Miocene
7,660 - 7,740 feet

Africa
Nigeria
Offshore

GENERAL CHARACTERISTICS

Gravity, specific, 0.847 Gravity, ° API, 35.6 Pour point, ° F., 55
Sulfur, percent, 0.08 Color, dark green
Viscosity, Saybolt Universal at 77°F, 54 sec.; 100°F, 42 sec. Nitrogen, percent, 0.040

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 731 mm. Hg
First drop, 88 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
1	122									
2	167	1.9	1.9	0.673	78.8	-	1.40237	139.5		
3	212	3.1	5.0	.727	63.1	25	1.40372	127.4		
4	237	5.8	10.8	.758	55.2	30	1.42012	133.4		
5	302	5.7	16.5	.779	50.1	33	1.43199	140.4		
6	347	4.5	21.0	.795	46.5	33	1.44259	144.9		
7	392	4.2	25.2	.811	43.0	35	1.44995	147.2		
8	437	4.4	29.6	.822	40.6	34	1.45595	148.0		
9	482	7.1	36.7	.832	38.6	34	1.46177	149.8		
10	527	7.0	43.7	.840	37.0	33	1.46634	152.8		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
11	392	10.1	53.8	0.846	35.8	32	1.47093	156.5	41	25
12	437	9.4	63.2	.851	34.8	30	1.47207	155.4	48	60
13	482	7.4	70.6	.863	32.5	33			59	80
14	527	6.5	77.1	.872	30.8	34			80	100
15	572	8.2	85.3	.885	28.4	37			-	125
Residuum		14.3	99.6	.976	13.5					

Carbon residue, Conradson: Residuum, 5.2 percent; crude, 0.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	5.0	0.704	68.8	
Total gasoline and naphtha	25.2	0.768	52.8	
Kerosine distillate	4.4	.822	40.6	
Gas oil	30.4	.842	36.5	
Nonviscous lubricating distillate	15.9	.853-.876	34.4-30.1	50-100
Medium lubricating distillate	9.4	.876-.892	30.1-27.1	100-200
Viscous lubricating distillate				Above 200
Residuum	14.3	.976	13.5	
Distillation loss	0.4			

Bureau of Mines Bartlesville Laboratory Item 48
Sample 50101

IDENTIFICATION

Seria field
Tertiary

Asia
Borneo

GENERAL CHARACTERISTICS

Gravity, specific, 0.841 Gravity, ° API, 36.8 Pour point, ° F., 10
Sulfur, percent, less than 0.10 Color, brownish green
Viscosity, Saybolt Universal at 100°F, 35 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 744 mm. Hg
First drop, 84 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
1	122									
2	167	3.0	3.0	0.665	81.3	-	1.38938	122.1		
3	212	4.9	7.9	.731	62.1	27	1.40533	128.7		
4	257	9.2	17.1	.762	54.2	32	1.42175	139.3		
5	302	7.0	24.1	.782	49.5	34	1.43455	149.5		
6	347	7.1	31.2	.800	45.4	36	1.44529	154.1		
7	392	5.9	37.1	.813	42.6	36	1.45248	155.1		
8	437	6.5	43.6	.829	39.2	38	1.46136	159.2		
9	482	9.1	52.7	.850	35.0	42	1.47450	172.3		
10	527	11.1	63.8	.869	31.3	47	1.48632	183.2		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
11	392	7.6	71.4	0.874	30.4	45	1.49333	180.0	40	25
12	437	6.8	78.2	.877	29.9	43	1.49253	181.9	46	45
13	482	4.9	83.1	.889	27.7	49			57	70
14	527	4.6	87.7	.898	26.1	46			85	90
15	572	4.8	92.5	.910	24.0	49			-	105
Residuum		7.4	99.9	.990	11.4					

Carbon residue, Conradson: Residuum, 3.8 percent; crude, 0.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	7.9	0.706	68.9	
Total gasoline and naphtha	37.1	0.769	52.5	
Kerosine distillate	-	-	-	
Gas oil	39.9	.861	32.8	
Nonviscous lubricating distillate	11.0	.881-.904	29.1-25.0	50-100
Medium lubricating distillate	4.5	.904-.916	25.0-23.0	100-200
Viscous lubricating distillate				Above 200
Residuum	7.4	.990	11.4	
Distillation loss	0.1			

Bureau of Mines Bartlesville Laboratory Item 49
Sample 70013

Bekasap field

IDENTIFICATION

Asia
Sumatra

GENERAL CHARACTERISTICS

Gravity, specific, 0.872 Gravity, ° API, 30.8 Pour point, ° F., 65
Sulfur, percent, 0.17 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 115 sec.; 130°F., 74 sec. Nitrogen, percent, 0.124

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 135 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	1.2	1.2	0.710	67.8	17	1.39251	123.5		
4	257	2.9	4.1	.733	61.5	18	1.40565	126.5		
5	302	3.1	7.2	.750	57.2	19	1.41619	132.0		
6	347	3.0	10.2	.770	52.3	22	1.42527	136.7		
7	392	3.1	13.3	.782	49.4	21	1.43338	137.7		
8	437	3.3	16.6	.799	45.6	24	1.44159	143.3		
9	482	4.5	21.1	.813	42.5	25	1.45014	144.5		
10	527	4.7	25.8	.824	40.2	25	1.45692	147.4		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
11	392	9.2	35.0	0.839	37.2	28	1.46379	148.4	43	55
12	437	4.4	39.4	.845	36.0	28			50	75
13	482	5.9	45.3	.870	31.1	36			-	100
14	527	8.5	53.8	.887	28.0	41			-	125
15	572									
Residuum		46.0	99.8	.924	21.6					

Carbon residue, Conradson: Residuum, 5.4 percent; crude, 2.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	1.2	0.710	67.8	
Total gasoline and naphtha	13.3	0.755	56.0	
Kerosene distillate	12.5	.813	42.5	
Gas oil	11.4	.840	37.0	
Nonviscous lubricating distillate	10.6	.845-.883	36.0-28.8	50-100
Medium lubricating distillate	6.0	.883-.897	28.8-26.2	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	46.0	.924	21.6	
Distillation loss	0.2			

Bureau of Mines Bartlesville Laboratory Item 50
Sample 69024

Duri field
Tertiary

IDENTIFICATION

Asia
Sumatra

GENERAL CHARACTERISTICS

Gravity, specific, 0.936 Gravity, ° API, 19.7 Pour point, ° F., 50
Sulfur, percent, 0.18 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 1.661 sec.; 130°F., 618 sec. Nitrogen, percent, 0.337

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 742 mm. Hg
First drop, 134 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	257	0.8	0.8	0.765	53.5	-	1.41593	130.5		
5	302	1.2	2.0	.774	51.3	30	1.42690	132.7		
6	347	1.1	3.1	.792	47.2	32	1.43958	135.7		
7	392	1.4	4.5	.818	41.5	38	1.44894	140.2		
8	437	2.0	6.5	.835	38.0	41	1.45903	141.9		
9	482	3.1	9.6	.853	34.4	44	1.47027	148.9		
10	527	4.3	13.2	.869	31.3	47	1.48085	162.9		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
11	392	3.8	17.7	0.889	27.7	52	1.49433	176.7	45	Below 5
12	437	4.8	22.5	.906	24.7	56	1.50149	185.4	60	10
13	482	4.4	26.9	.915	23.1	57			93	40
14	527	4.5	31.4	.925	21.5	59			158	55
15	572	5.5	36.9	.933	20.2	60			255	75
Residuum		62.6	99.5	.968	14.7					

Carbon residue, Conradson: Residuum, 5.7 percent; crude, 3.7 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha	4.5	0.790	47.5	
Kerosene distillate	-	-	-	
Gas oil	12.7	.845	32.1	
Nonviscous lubricating distillate	8.0	.895-.916	26.7-23.0	50-100
Medium lubricating distillate	6.1	.916-.928	23.0-20.9	100-200
Viscous lubricating distillate	5.6	.928-.937	20.9-19.4	Above 200
Residuum	62.6	.968	14.7	
Distillation loss	0.5			

1/ Distillation discontinued at 545°F.

Bureau of Mines Bartlesville Laboratory Item 51
Sample 56102

IDENTIFICATION

Minas field
Telisa, Miocene

Asia
Sumatra

GENERAL CHARACTERISTICS

Gravity, specific, 0.861 Gravity, ° API, 32.8 Pour point, ° F., 75
Sulfur, percent, 0.10 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 92 sec.; 130°F., 66 sec. Nitrogen, percent, 0.130

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 751 mm. Hg
First drop, 84 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visco. 100° F.	Cloud test, ° F.
1	122									
2	167	2.3	2.3	0.658	83.6	-	1.37257	123.6		
3	212	2.3	4.6	700	70.6	12	1.39106	119.3		
4	257	3.4	8.0	726	63.4	15	1.40455	123.3		
5	302	3.7	11.7	745	58.4	17	1.41479	122.1		
6	347	3.4	15.1	757	55.4	15	1.42371	122.1		
7	392	3.5	18.6	772	51.8	16	1.43201	122.4		
8	437	3.8	22.4	790	47.6	15	1.44036	132.2		
9	482	4.8	27.2	805	44.3	21	1.44880	136.8		
10	527	6.1	33.3	819	41.3	23	1.45625	143.6		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visco. 100° F.	Cloud test, ° F.
11	392	3.7	37.0	0.830	39.0	24	1.46246	151.9	39	30
12	437	5.1	42.1	834	36.2	22	1.46454	150.7	43	50
13	482	5.2	47.3	842	36.6	23			51	70
14	527	7.9	55.2	855	34.0	26			65	95
15	572	7.0	62.2	871	31.0	30			-	115
Residuum		37.3	99.5	952	17.1					

Carbon residue, Conradson: Residuum, 3.7 percent; crude, 1.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	4.6	0.679	76.9	
Total gasoline and naphtha	18.6	0.732	61.8	
Kerosene distillate	14.7	807	43.8	
Gas oil	10.8	835	38.0	
Nonviscous lubricating distillate	18.1	841-.879	36.8-29.7	50-100
Medium lubricating distillate				100-200
Viscous lubricating distillate				Above 200
Residuum	37.3	952	17.1	
Distillation loss	0.5			

Bureau of Mines Bartlesville Laboratory Item 52
Sample 70004

IDENTIFICATION

Minas field
Telisa, Miocene

Asia
Sumatra

GENERAL CHARACTERISTICS

Gravity, specific, 0.863 Gravity, ° API, 32.5 Pour point, ° F., 75
Sulfur, percent, 0.13 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 82 sec.; 130°F., 48 sec. Nitrogen, percent, 0.105

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 753 mm. Hg
First drop, 144 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visco. 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	2.3	2.3	0.696	71.8	-	1.40201	127.4		
4	257	3.3	5.6	728	62.9	16	1.40472	129.7		
5	302	3.3	8.9	747	57.9	17	1.41429	130.2		
6	347	3.2	12.1	762	54.2	18	1.42328	133.5		
7	392	3.3	15.4	776	50.8	18	1.43076	136.3		
8	437	4.2	19.6	791	47.4	20	1.43885	138.1		
9	482	4.9	24.5	806	44.1	22	1.44801	142.7		
10	527	5.1	29.6	818	41.5	22	1.45498	148.3		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visco. 100° F.	Cloud test, ° F.
11	392	6.0	35.6	0.833	38.4	26	1.46273	150.4	40	40
12	437	6.0	41.6	840	37.0	25	1.46502	153.0	45	65
13	482	6.6	48.2	849	35.2	26			57	90
14	527	5.8	54.0	858	33.4	27			-	110
15	572	4.9	58.9	868	31.5	29			-	125
Residuum		41.0	99.9	933	20.2					

Carbon residue, Conradson: Residuum, 6.5 percent; crude, 2.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	2.3	0.696	71.8	
Total gasoline and naphtha	15.4	0.745	58.5	
Kerosene distillate	14.2	806	44.1	
Gas oil	11.6	836	37.7	
Nonviscous lubricating distillate	11.4	844-.861	36.2-32.9	50-100
Medium lubricating distillate	6.3	861-.873	32.9-30.7	100-200
Viscous lubricating distillate				Above 200
Residuum	41.0	933	20.2	
Distillation loss	0.1			

Bureau of Mines Bartlesville Laboratory Item 53
Sample 70014

IDENTIFICATION

Pematang field

Asia
Sumatra

GENERAL CHARACTERISTICS

Gravity, specific, 0.875 Gravity, ° API, 30.2 Pour point, ° F., 85
Sulfur, percent, 0.10 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 179 sec.; 130°F., 87 sec. Nitrogen, percent, 0.159

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 154 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	257	3.4	3.4	0.730	62.3		1.40695	129.5		
5	302	3.0	6.4	.732	54.9	23	1.41682	130.2		
6	347	3.0	9.4	.776	50.8	24	1.42673	135.0		
7	392	3.0	12.4	.788	48.1	24	1.43530	136.0		
8	437	3.3	15.7	.804	44.5	26	1.44363	132.9		
9	482	4.9	20.6	.818	41.5	27	1.45228	145.2		
10	527	4.3	24.9	.827	39.6	27	1.45825	147.2		

Stage 2—Distillation continued at 40 mm. Hg

11	392	3.6	28.5	0.841	36.8	29	1.46374	148.0	40	45
12	437	5.3	33.8	.846	35.8	28	1.46510	150.7	46	65
13	482	4.9	38.7	.853	34.4	28			55	85
1/14	527	5.6	44.3	.861	32.8	29				125
15	572									
Residuum		54.7	99.0	.922	22.0					

Carbon residue, Conradson: Residuum, 6.0 percent; crude, 3.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha	12.4	0.762	54.2	
Kerosine distillate	8.2	.812	42.7	
Gas oil	12.8	.838	37.3	
Nonviscous lubricating distillate	10.9	.849-.865	35.2-32.0	50-100
Medium lubricating distillate				100-200
Viscous lubricating distillate				Above 200
Residuum	54.7	.922	22.0	
Distillation loss	1.0			

1/ Distillation discontinued at 527°F.

Bureau of Mines Bartlesville Laboratory Item 54
Sample 53070

IDENTIFICATION

Ampur Fang field
759 - 775 feetAsia
Thailand

GENERAL CHARACTERISTICS

Gravity, specific, 0.957 Gravity, ° API, 16.4 Pour point, ° F., 65
Sulfur, percent, 0.28 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 7,622 sec.; 130°F., 2,074 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 742 mm. Hg
First drop, 345 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	257									
5	302									
6	347									
7	392	0.8	0.8	0.825	40.0	-	1.45002	127.8		
8	437	1.0	1.8	.850	35.0	48	1.46136	128.6		
1/9	482	3.0	4.8	.864	32.3	49	1.47153	135.2		
10	527									

Stage 2—Distillation continued at 40 mm. Hg

11	392	3.0	7.8	0.890	27.5	53			43	Below 5
12	437	4.0	11.8	.902	25.4	55			52	do.
13	482	4.8	16.6	.920	22.3	60			79	do.
14	527	3.9	20.5	.930	20.7	61			160	do.
2/15	572	6.5	27.0	.942	18.7	-			over 400	do.
Residuum		72.4	99.4	.969	14.5					

Carbon residue, Conradson: Residuum, 11.7 percent; crude, 8.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha	0.8	0.825	40.0	
Kerosine distillate				
Gas oil	8.3	.877	29.9	
Nonviscous lubricating distillate	6.3	.899-.923	25.2-21.8	50-100
Medium lubricating distillate	4.1	.923-.932	21.8-20.3	100-200
Viscous lubricating distillate	7.5	.932-.949	20.3-17.6	Above 200
Residuum	72.4	.969	14.5	
Distillation loss	.6			

1/ Distillation discontinued at 482°F.

2/ Distillation discontinued at 563°F.

Bureau of Mines Bartlesville Laboratory Item 55
Sample 70008

IDENTIFICATION

Asia
Abu Dhabi

Bu Hasa I field

GENERAL CHARACTERISTICS

Gravity, specific, 0.831 Gravity, ° API, 38.8 Pour point, ° F., below 5
Sulfur, percent, 0.74 Color, brownish green
Viscosity, Saybolt Universal at 77°F., 39 sec.; 100°F., 37 sec. Nitrogen, percent, 0.032

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 755 mm. Hg
First drop, 82 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1.....	122	2.0	2.0	0.630	93.1					
2.....	167	2.9	4.9	.661	82.6	3.2	1.37360	130.8		
3.....	212	4.2	9.1	.700	70.6	12	1.39227	132.4		
4.....	237	5.8	14.9	.728	62.9	16	1.40828	134.3		
5.....	302	6.5	21.4	.754	56.2	21	1.42250	147.3		
6.....	347	6.3	27.7	.774	51.3	23	1.43327	148.4		
7.....	392	5.6	33.3	.786	48.5	23	1.44011	148.2		
8.....	437	5.7	39.0	.799	45.6	23	1.44604	149.2		
9.....	482	5.7	44.7	.810	43.2	23	1.45285	150.2		
10.....	527	5.3	50.0	.823	40.4	25	1.46043	156.4		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
11.....	392	5.9	55.9	0.842	36.6	30	1.46998	165.4	39	20
12.....	437	5.7	61.6	.855	34.0	32	1.47488	165.9	46	40
13.....	482	5.9	67.5	.871	31.0	36			56	70
14.....	527	5.5	73.0	.883	28.7	39			78	80
15.....	572	5.0	78.0	.889	27.7	39			124	90
Residuum		21.7	99.7	.952	17.1					

Carbon residue, Conradson: Residuum, 6.0 percent; crude, 1.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.1	0.672	79.0	
Total gasoline and naphtha	33.3	0.736	60.7	
Kerosine distillate	16.7	.810	43.1	
Gas oil	11.1	.848	35.4	
Nonviscous lubricating distillate	11.2	.861-.886	32.8-28.2	50-100
Medium lubricating distillate	5.2	.886-.892	28.2-27.2	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	21.7	.952	17.1	
Distillation loss	0.3			

Bureau of Mines Bartlesville Laboratory Item 56
Sample 70009

IDENTIFICATION

Asia
Abu Dhabi

Bu Hasa II field

GENERAL CHARACTERISTICS

Gravity, specific, 0.836 Gravity, ° API, 37.8 Pour point, ° F., below 5
Sulfur, percent, 0.77 Color, brownish green
Viscosity, Saybolt Universal at 77°F., 41 sec.; 100°F., 39 sec. Nitrogen, percent, 0.031

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 759 mm. Hg
First drop, 81 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1.....	122	1.2	1.2	0.630	93.1					
2.....	167	2.8	4.0	.663	81.9	4.2	1.37650	125.5		
3.....	212	4.3	8.3	.702	70.1	13	1.39342	135.3		
4.....	237	5.4	13.7	.730	62.3	17	1.40867	136.0		
5.....	302	6.2	19.9	.754	56.2	21	1.42202	140.3		
6.....	347	6.6	26.5	.773	51.6	23	1.43304	144.9		
7.....	392	5.5	32.0	.787	48.3	23	1.44036	147.9		
8.....	437	5.5	37.5	.798	45.8	23	1.44585	149.6		
9.....	482	5.8	43.3	.811	43.0	24	1.45313	151.4		
10.....	527	5.0	48.3	.824	40.2	25	1.46074	158.1		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
11.....	392	7.3	55.6	0.846	35.8	32	1.47085	161.9	40	25
12.....	437	5.2	60.8	.858	33.4	34	1.47664	163.6	47	60
13.....	482	6.0	66.8	.872	30.8	37			59	70
14.....	527	5.7	72.5	.883	28.7	39			85	85
15.....	572	6.1	78.6	.889	27.7	39			-	105
Residuum		21.1	99.7	.953	17.0					

Carbon residue, Conradson: Residuum, 6.2 percent; crude, 1.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.3	0.678	77.1	
Total gasoline and naphtha	32.0	0.740	59.7	
Kerosine distillate	16.3	.811	43.1	
Gas oil	11.3	.850	35.0	
Nonviscous lubricating distillate	11.2	.862-.885	32.7-28.4	50-100
Medium lubricating distillate	7.1	.885-.892	28.4-27.1	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	21.1	.953	17.0	
Distillation loss	0.3			

Bureau of Mines Bartlesville Laboratory Item 57
Sample 70010

IDENTIFICATION Asia
Hobshan field Abu Dhabi

GENERAL CHARACTERISTICS

Gravity, specific, 0.821 Gravity, ° API, 40.9 Pour point, ° F., below 5
Sulfur, percent, 0.71 Color, brownish green
Viscosity, Saybolt Universal at 77°F, 35 sec.; 100°F, 39 sec. Nitrogen, percent, 0.026

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 759 mm. Hg
First drop, 84 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test. ° F.
1	122	1.6	1.6	0.633	92.0					
2	167	3.6	5.2	0.668	80.3	6.5	1.37944	127.3		
3	212	5.4	10.6	0.706	68.9	15	1.39499	128.3		
4	257	5.7	16.3	0.733	61.5	18	1.41035	138.3		
5	302	6.6	22.9	0.756	55.7	22	1.42331	141.5		
6	347	6.0	28.9	0.775	51.1	24	1.43363	147.3		
7	392	6.1	35.0	0.789	47.8	24	1.44042	148.4		
8	437	5.3	40.3	0.798	45.8	23	1.45580	150.3		
9	482	6.1	46.4	0.811	43.0	24	1.45305	150.7		
10	527	5.1	51.5	0.826	39.8	26	1.46088	156.7		

Stage 2—Distillation continued at 40 mm. Hg

11	392	6.6	58.1	0.844	36.2	31	1.47103	159.4	41	20
12	437	5.7	63.8	0.859	33.2	34	1.47760	164.1	47	45
13	482	6.4	70.2	0.876	30.0	39			62	75
14	527	6.2	76.4	0.886	28.2	40			104	90
15	572	4.6	81.0	0.899	25.9	44				100
Residuum		15.8	96.8	0.958	16.2					

Carbon residue, Conradson: Residuum, 6.8 percent; crude, 1.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	10.6	0.682	76.0	
Total gasoline and naphtha	35.0	0.739	60.0	
Kerosine distillate	11.4	0.805	44.3	
Gas oil	15.8	0.842	36.6	
Nonviscous lubricating distillate	10.5	0.862-0.885	32.6-28.4	50-100
Medium lubricating distillate	8.3	0.885-0.905	28.4-24.9	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	15.8	0.958	16.2	
Distillation loss	3.2			

Bureau of Mines Bartlesville Laboratory Item 58
Sample 70007

IDENTIFICATION Asia
Murban-Bab-Buhasa field Abu Dhabi
Cretaceous

GENERAL CHARACTERISTICS

Gravity, specific, 0.829 Gravity, ° API, 39.2 Pour point, ° F., below 5
Sulfur, percent, 0.62 Color, brownish green
Viscosity, Saybolt Universal at 77°F, 39 sec.; 100°F, 37 sec. Nitrogen, percent, 0.028

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 755 mm. Hg
First drop, 81 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test. ° F.
1	122	1.7	1.7	0.620	96.7					
2	167	2.9	4.6	0.650	86.2	2.0	1.37309	129.8		
3	212	4.9	9.5	0.700	70.6	12	1.39206	130.5		
4	257	8.0	15.5	0.730	62.3	17	1.40949	137.9		
5	302	8.7	22.2	0.756	55.7	22	1.42351	140.8		
6	347	6.4	28.6	0.773	51.6	23	1.43363	145.4		
7	392	5.7	34.3	0.786	48.5	23	1.44056	145.8		
8	437	5.6	39.9	0.799	45.6	23	1.44637	146.4		
9	482	5.9	45.8	0.811	43.0	24	1.45351	147.7		
10	527	4.9	50.7	0.825	40.0	26	1.46096	159.2		

Stage 2—Distillation continued at 40 mm. Hg

11	392	5.7	56.4	0.846	35.8	32	1.47032	162.5	40	20
12	437	5.6	62.0	0.855	34.0	32	1.47584	162.8	46	55
13	482	6.5	68.5	0.876	30.0	39	1.48466	169.5	59	60
14	527	6.0	74.5	0.885	28.4	40			84	75
15	572	5.6	80.1	0.895	26.6	42			143	90
Residuum		19.1	99.2	0.955	16.7					

Carbon residue, Conradson: Residuum, 6.2 percent; crude, 1.4 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.5	0.670	79.6	
Total gasoline and naphtha	34.3	0.736	60.8	
Kerosine distillate	16.4	0.811	43.0	
Gas oil	10.4	0.850	35.0	
Nonviscous lubricating distillate	12.0	0.861-0.888	32.8-27.9	50-100
Medium lubricating distillate	7.0	0.888-0.900	27.9-25.8	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	19.1	0.955	16.7	
Distillation loss	0.8			

Bureau of Mines Bartlesville Laboratory Item 59
Sample 47049

IDENTIFICATION

Bahrain field
Cretaceous and Jurassic

Asia
Bahrain

GENERAL CHARACTERISTICS

Gravity, specific, 0.849 Gravity, ° API, 35.2 Pour point, ° F., -
Sulfur, percent, 1.42 Color, greenish black
Viscosity, Saybolt Universal at 100°F, 44 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure. 743 mm. Hg
First drop, 99 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167	5.8	5.8	0.667	80.6	-	1.38240	130.2		
3	212	2.6	8.4	.709	68.1	16	1.39720	135.5		
4	257	4.1	12.5	.730	62.3	17	1.40900	135.1		
5	302	5.7	18.2	.751	56.9	19	1.42036	141.4		
6	347	6.1	24.3	.771	52.0	22	1.43201	144.5		
7	392	5.1	29.4	.785	48.8	23	1.43943	147.4		
8	437	6.2	35.6	.797	46.0	23	1.44529	143.4		
9	482	5.1	40.7	.812	42.8	23	1.45283	146.5		
10	527	6.8	47.5	.829	39.2	28	1.46280	155.3		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	3.0	50.5	0.848	35.4	33	1.47260	158.2	41	20
12	437	7.1	57.6	.857	33.6	33	1.48268	164.2	45	35
13	482	6.4	64.0	.877	29.9	39			57	55
14	527	4.6	68.6	.895	26.6	45			87	70
15	572	5.3	73.9	.900	25.7	44			135	85
Residuum		25.1	99.0	.970	14.4					

Carbon residuum, Conradson: Residuum, 10.8 percent; crude, 3.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.4	0.680	76.6	
Total gasoline and naphtha	29.4	0.738	60.2	
Kerosene distillate	11.3	.804	44.5	
Gas oil	16.4	.845	36.0	
Nonviscous lubricating distillate	10.6	.866-.896	31.9-26.4	50-100
Medium lubricating distillate	8.2	.896-.903	26.4-23.2	100-200
Viscous lubricating distillate				Above 200
Residuum	25.1	.970	14.4	
Distillation loss	1.0			

Bureau of Mines Bartlesville Laboratory Item 60
Sample 49014

IDENTIFICATION

Agha Jari field
Asmari, Oligocene-Lower Miocene
4,500 feet

Asia
Iran
Khuzistan

GENERAL CHARACTERISTICS

Gravity, specific, 0.850 Gravity, ° API, 35.0 Pour point, ° F., below 5
Sulfur, percent, 1.39 Color, greenish black
Viscosity, Saybolt Universal at 100°F, 39 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure. 746 mm. Hg
First drop, 86 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.9	2.9	0.638	90.3					
2	167	3.1	6.0	.671	79.4	8.0	1.37734	124.5		
3	212	3.5	9.5	.712	67.2	18	1.39792	132.3		
4	257	5.5	15.0	.738	60.2	21	1.41175	138.7		
5	302	5.5	20.5	.759	54.2	23	1.42409	141.9		
6	347	5.3	25.8	.778	50.4	25	1.43353	144.8		
7	392	4.7	30.5	.792	47.2	26	1.44055	143.8		
8	437	4.3	34.8	.805	44.3	26	1.44710	143.7		
9	482	5.1	39.9	.819	41.3	28	1.45528	148.0		
10	527	6.2	46.1	.837	37.6	32	1.46463	163.0		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	3.7	49.8	0.852	34.6	35	1.47297	163.9	41	20
12	437	5.5	55.3	.863	32.5	36	1.48154	166.0	46	35
13	482	6.9	62.2	.882	28.9	42			60	55
14	527	4.0	66.2	.897	26.3	46			100	70
15	572	5.8	72.0	.908	24.3	48			210	85
Residuum		25.3	97.3	.984	12.3					

Carbon residuum, Conradson: Residuum, 13.1 percent; crude, 3.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.5	0.676	77.8	
Total gasoline and naphtha	30.5	0.738	60.2	
Kerosene distillate	9.4	.813	42.6	
Gas oil	14.5	.849	35.2	
Nonviscous lubricating distillate	9.8	.869-.897	31.3-26.3	50-100
Medium lubricating distillate	4.5	.897-.907	26.3-24.5	100-200
Viscous lubricating distillate	3.3	.907-.914	24.5-23.3	Above 200
Residuum	25.3	.984	12.3	
Distillation loss	2.7			

Bureau of Mines Bartlesville Laboratory Item 61
Sample 55086

IDENTIFICATION

Agha Jari field
Asmari, Oligocene-Lower Miocene

Asia
Iran
Khuzistan

GENERAL CHARACTERISTICS

Gravity, specific, 0.852 Gravity, ° API, 34.6 Pour point, ° F., 20
Sulfur, percent, 1.43 Color, Brownish black
Viscosity, Saybolt Universal at 77°F., 53 sec.; 100°F., 46 sec. Nitrogen, percent, 0.015

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 82 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index n _D at 20° C.	Specific dispersion	S. U. viscos. 100° F.	Cloud test, ° F.
1	122									
2	167	5.0	5.0	0.648	86.9	-	1.37312	128.6		
3	212	3.7	8.7	.705	69.2	14	1.39701	130.7		
4	257	4.8	13.5	.735	61.0	19	1.41094	138.4		
5	302	4.9	18.4	.756	55.7	22	1.42285	140.2		
6	347	5.5	23.9	.774	51.3	23	1.43227	144.4		
7	392	4.9	28.8	.788	48.1	24	1.43969	144.0		
8	437	4.5	33.3	.801	45.2	24	1.44637	141.8		
9	482	5.7	39.0	.817	41.7	27	1.45470	146.0		
10	527	6.0	45.0	.836	37.8	31	1.46484	154.3		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index n _D at 20° C.	Specific dispersion	S. U. viscos. 100° F.	Cloud test, ° F.
11	392	2.1	47.1	0.855	34.0	36	1.47460	155.9	40	10
12	437	5.8	52.9	.864	32.3	37	1.47832	154.5	44	30
13	482	5.6	58.5	.878	29.7	40	1.48620	154.5	54	45
14	527	4.8	63.3	.892	27.1	43			75	60
15	572	5.5	68.8	.908	24.3	48			130	75
Residuum		28.9	97.7	.979	13.0					

Carbon residue, Conradson: Residuum, 9.1 percent; crude, 3.0 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.7	0.672	79.1	
Total gasoline and naphtha	28.8	0.736	60.8	
Kerosine distillate	10.2	.810	43.2	
Gas oil	14.6	.852	34.6	
Nonviscous lubricating distillate	9.6	.873-.899	30.6-25.9	50-100
Medium lubricating distillate	5.6	.899-.916	25.9-23.0	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	28.9	.979	13.0	
Distillation loss	2.3			

Bureau of Mines Bartlesville Laboratory Item 62
Sample 69086

IDENTIFICATION

Cyrus field
Jurassic

Asia
Iran

GENERAL CHARACTERISTICS

Gravity, specific, 0.950 Gravity, ° API, 17.4 Pour point, ° F., 40
Sulfur, percent, 3.68 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 2,369 sec.; 130°F., 983 sec. Nitrogen, percent, 0.300

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 84 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index n _D at 20° C.	Specific dispersion	S. U. viscos. 100° F.	Cloud test, ° F.
1	122									
2	167	1.8	1.8	0.649	86.5	-	1.38704	134.0		
3	212	1.8	3.6	.711	67.5	17	1.40276	134.9		
4	257	2.1	5.7	.736	60.8	20	1.41005	135.7		
5	302	2.1	7.8	.757	55.4	22	1.42035	135.3		
6	347	2.1	9.9	.777	50.6	25	1.43093	138.4		
7	392	2.2	12.1	.794	46.7	27	1.44048	139.5		
8	437	2.9	15.0	.811	43.0	29	1.44919	140.7		
9	482	4.6	19.6	.827	39.6	31	1.45949	149.7		
10	527	4.2	23.8	.842	36.6	34	1.46859	159.0		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index n _D at 20° C.	Specific dispersion	S. U. viscos. 100° F.	Cloud test, ° F.
11	392	2.1	25.9	0.871	31.0	44	1.48146	167.1	40	15
12	437	3.3	29.2	.877	29.8	43	1.48612	169.2	47	30
13	482	4.3	33.5	.889	27.7	45	1.49275	176.4	57	40
14	527	4.4	37.9	.906	24.7	50			83	70
15	572	7.4	45.3	.918	22.6	53			150	90
Residuum		54.6	99.9	1.039	4.7					

Carbon residue, Conradson: Residuum, 10.4 percent; crude, 6.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	3.6	0.680	76.6	
Total gasoline and naphtha	12.1	0.741	59.6	
Kerosine distillate	2.9	.811	43.0	
Gas oil	13.7	.848	35.3	
Nonviscous lubricating distillate	8.5	.881-.909	29.2-24.2	50-100
Medium lubricating distillate	8.1	.909-.926	24.2-21.4	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	54.6	1.039	4.7	
Distillation loss	0.1			

Bureau of Mines Bartlesville Laboratory Item 63
Sample 69085

Darius field
Cretaceous

IDENTIFICATION

Asia
Iran

GENERAL CHARACTERISTICS

Gravity, specific, 0.859 Gravity, ° API, 33.2 Pour point, ° F., below 5
Sulfur, percent, 2.44 Color, brownish black
Viscosity, Saybolt Universal at 77° F., 55 sec.; 100° F., 47 sec. Nitrogen, percent, 0.089

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 72 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	3.1	3.1	0.625	94.9					
2	167	3.6	6.7	.665	81.3	5.1	1.37703	130.3		
3	212	4.1	10.8	.702	70.1	13	1.39363	132.3		
4	257	4.9	15.7	.729	62.6	17	1.40932	139.6		
5	302	5.1	20.8	.756	55.7	22	1.42252	141.8		
6	347	5.1	25.9	.773	51.6	23	1.43281	142.1		
7	392	4.7	30.6	.788	48.1	24	1.43936	143.9		
8	437	4.2	34.8	.800	45.4	24	1.44524	144.1		
9	482	4.5	39.3	.813	42.5	25	1.45305	149.3		
10	527	4.9	44.2	.832	38.6	29	1.46315	154.5		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	3.3	47.5	0.856	33.8	36	1.47558	164.7	40	15
12	437	4.8	52.3	.866	31.9	37	1.48014	168.9	45	30
13	482	5.2	57.5	.883	28.7	42	1.48893	171.4	55	50
14	527	5.4	62.9	.896	26.4	45			78	70
15	572	6.5	69.4	.908	24.3	48			141	95
Residuum		29.2	98.6	.999	10.1					

Carbon residue, Conradson: Residuum, 13.5 percent; crude, 4.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	10.8	0.668	80.5	
Total gasoline and naphtha	30.6	0.728	62.8	
Kerosine distillate	8.7	.807	43.9	
Gas oil	13.1	.851	34.8	
Nonviscous lubricating distillate	9.9	.875-.900	30.3-25.7	50-100
Medium lubricating distillate	7.1	.900-.915	25.7-23.2	100-200
Viscous lubricating distillate				Above 200
Residuum	29.2	.999	10.1	
Distillation loss	1.4			

Bureau of Mines Bartlesville Laboratory Item 64
Sample 70113

Gach Saran field
Asmari, L. Miocene
4,268 feet

IDENTIFICATION

Asia
Iran

GENERAL CHARACTERISTICS

Gravity, specific, 0.880 Gravity, ° API, 29.3 Pour point, ° F., below 5
Sulfur, percent, 1.57 Color, brownish black
Viscosity, Saybolt Universal at 77° F., 91 sec.; 100° F., 72 sec. Nitrogen, percent, 0.226

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 752 mm. Hg
First drop, 84 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167	2.5	2.5	0.660	82.9		1.37285	122.3		
3	212	3.3	5.8	.705	69.2	14	1.39538	122.4		
4	257	4.9	10.7	.737	60.5	20	1.41056	137.1		
5	302	4.6	15.3	.760	54.7	24	1.42292	137.3		
6	347	4.2	19.5	.778	50.4	25	1.43315	140.6		
7	392	4.5	24.0	.793	46.9	26	1.44067	144.1		
8	437	4.5	28.5	.805	44.3	26	1.44801	150.2		
9	482	5.1	33.6	.822	40.6	29	1.45711	152.2		
10	527	5.7	39.3	.837	37.6	31	1.46611	157.0		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	3.0	42.3	0.861	32.8	39	1.47540	160.6	41	20
12	437	5.5	47.8	.870	31.1	39	1.47880	164.0	46	30
13	482	4.9	52.7	.884	28.6	43	1.48776	178.3	58	55
14	527	5.5	58.2	.895	26.6	45			88	75
15	572	5.6	63.8	.902	24.2	48			161	95
Residuum		34.2	98.7	.999	10.1					

Carbon residue, Conradson: Residuum, 11.9 percent; crude, 4.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	5.8	0.686	74.9	
Total gasoline and naphtha	24.7	0.748	57.8	
Kerosine distillate	9.6	.814	42.3	
Gas oil	13.2	.853	34.3	
Nonviscous lubricating distillate	2.6	.875-.897	30.3-26.2	50-100
Medium lubricating distillate	7.4	.897-.916	26.2-23.0	100-200
Viscous lubricating distillate				Above 200
Residuum	34.2	.999	10.1	
Distillation loss	1.3			

Bureau of Mines Bartlesville Laboratory
Sample 69080

Item 65

IDENTIFICATION

Sassan
Upper and Lower Arab, Clastic, Jurassic

Asia
Iran

GENERAL CHARACTERISTICS

Gravity, specific, 0.858 Gravity, ° API, 33.4 Pour point, ° F., below 5
Sulfur, percent, 2.06 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 49 sec.; 100°F., 47 sec. Nitrogen, percent, 0.082

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Strain 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 79 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122	1.9	1.9	0.636	91.0					
2	167	2.8	4.7	.671	79.4	8.0	1.38220	130.6		
3	212	3.8	8.5	.704	69.5	14	1.39523	133.9		
4	257	4.5	13.0	.731	62.1	17	1.40870	143.6		
5	302	5.3	18.3	.758	55.2	23	1.42337	147.8		
6	347	5.5	23.8	.775	51.1	24	1.43372	147.6		
7	392	5.0	28.8	.791	47.4	25	1.44154	148.9		
8	437	4.8	33.6	.802	44.9	25	1.44817	149.8		
9	482	5.3	38.9	.819	41.3	28	1.45700	151.8		
10	527	5.0	43.9	.835	38.0	31	1.46674	168.7		

Strain 2—Distillation continued at 40 mm. Hg

11	392	4.8	48.7	0.863	32.5	40	1.47837	169.7	41	20
12	437	5.3	54.0	.874	30.4	41	1.48456	175.5	48	40
13	482	4.9	58.9	.889	27.7	45	1.49399	178.3	62	55
14	527	5.5	64.4	.906	24.7	50			95	75
15	572	6.1	70.5	.922	22.0	54			194	95
Residuum		27.2	97.7	.999	10.1					

Carbon residuo, Conradson: Residuum, 13.2 percent; crude, 4.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.5	0.678	77.2	
Total gasoline and naphtha	28.8	0.739	59.9	
Kerosine distillate	10.1	.811	43.0	
Gas oil	13.2	.855	34.1	
Nonviscous lubricating distillate	9.9	.876-.907	30.0-24.5	50-100
Medium lubricating distillate	5.8	.907-.923	24.5-21.8	100-200
Viscous lubricating distillate	2.7	.923-.930	21.8-20.6	Above 200
Residuum	27.2	.999	10.1	
Distillation loss	2.3			

Bureau of Mines Bartlesville Laboratory
Sample 55001

Item 66

IDENTIFICATION

Burgan field
Cretaceous and Jurassic

Asia
Kuwait

GENERAL CHARACTERISTICS

Gravity, specific, 0.868 Gravity, ° API, 31.5 Pour point, ° F., below 5
Sulfur, percent, 2.62 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 77 sec.; 100°F., 68 sec. Nitrogen, percent, 0.132

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Strain 1—Distillation at atmospheric pressure, 759 mm. Hg
First drop, 84 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122	2.8	2.8	0.640	89.6					
2	167	2.5	5.3	.657	83.9	1.3	1.37408	129.6		
3	212	3.2	8.5	.692	73.0	8.0	1.38981	125.9		
4	257	4.2	12.7	.721	64.8	13	1.40465	130.4		
5	302	4.3	17.0	.745	58.4	17	1.41760	138.9		
6	347	4.5	21.5	.767	53.0	20	1.42907	142.7		
7	392	4.0	25.5	.782	49.5	22	1.43743	142.8		
8	437	4.0	29.5	.796	46.3	22	1.44437	143.1		
9	482	4.2	33.7	.810	43.2	23	1.45150	148.3		
10	527	5.5	39.2	.828	39.4	27	1.46130	149.4		

Strain 2—Distillation continued at 40 mm. Hg

11	392	3.4	42.6	0.852	34.6	35	1.47291	158.7	39	20
12	437	5.3	47.9	.863	32.5	36	1.47942	162.3	45	35
13	482	3.8	51.7	.878	29.7	40	1.48755	171.4	55	50
14	527	4.6	56.3	.895	26.6	45			76	60
15	572	6.4	62.7	.914	23.3	51			145	80
Residuum		34.8	97.5	1.000	10.0					

Carbon residuo, Conradson: Residuum, 13.6 percent; crude, 5.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.5	0.665	81.3	
Total gasoline and naphtha	25.5	0.724	63.9	
Kerosine distillate	8.2	.803	44.7	
Gas oil	13.9	.847	35.6	
Nonviscous lubricating distillate	8.3	.870-.901	31.1-25.6	50-100
Medium lubricating distillate	6.8	.901-.925	25.6-21.5	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	34.8	1.000	10.0	
Distillation loss	2.5			

Bureau of Mines Bartlesville Laboratory
Sample 59200

Item 67

IDENTIFICATION

Burgan field
Cretaceous and Jurassic

Asia
Kuwait

GENERAL CHARACTERISTICS

Gravity, specific, 0.871 Gravity, ° API, 31.0 Pour point, ° F., below 5
Sulfur, percent, 2.54 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 91 sec.; 100°F., 77 sec. Nitrogen, percent, 0.112

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 82 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum, percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1.....	122	2.4	2.4	0.649	86.5					
2.....	167	2.5	4.9	.658	83.6	1.8	1.37309	120.4		
3.....	212	3.4	8.3	.692	73.0	8.0	1.38671	125.0		
4.....	257	4.8	13.1	.721	64.8	13	1.40366	131.8		
5.....	302	4.1	17.2	.748	57.7	18	1.41759	137.1		
6.....	347	4.6	21.8	.769	52.5	21	1.42857	139.9		
7.....	392	3.6	25.4	.782	49.5	21	1.43691	141.0		
8.....	437	4.2	29.6	.797	46.0	23	1.44285	140.9		
9.....	482	4.5	34.1	.812	42.8	24	1.45066	142.3		
10.....	527	5.8	39.9	.830	39.0	28	1.46118	151.6		

Stage 2—Distillation continued at 40 mm. Hg

11.....	392	3.0	42.9	0.851	34.8	34	1.47420	160.3	40	15
12.....	437	5.1	48.0	.862	32.7	36	1.47988	164.2	45	30
13.....	482	4.6	52.6	.879	29.5	40	1.48891	172.6	57	45
14.....	527	5.2	57.8	.897	26.3	46	1.49861	175.4	85	60
15.....	572	4.2	62.7	.914	23.3	51			165	80
Residuum		35.8	98.5	.999	10.1					

Carbon residue, Conradson: Residuum, 11.2 percent; crude, 4.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	8.3	0.669	80.0	
Total gasoline and naphtha.....	25.4	0.726	63.4	
Kerosene distillate.....	8.7	.805	44.3	
Gas oil.....	13.5	.846	35.8	
Nonviscous lubricating distillate.....	8.6	.869-.900	31.3-25.7	50-100
Medium lubricating distillate.....	6.3	.900-.921	25.7-22.1	100-200
Viscous lubricating distillate.....	0.2	.921-.922	22.1-22.0	Above 200
Residuum.....	35.8	.999	10.1	
Distillation loss.....	1.5			

Bureau of Mines Bartlesville Laboratory
Sample 69068

Item 68

IDENTIFICATION

Khafji field
Cretaceous and Jurassic

Asia
Kuwait

GENERAL CHARACTERISTICS

Gravity, specific, 0.889 Gravity, ° API, 27.7 Pour point, ° F., below 5
Sulfur, percent, 2.99 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 113 sec.; 100°F., 82 sec. Nitrogen, percent, 0.159

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum, percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1.....	122	2.4	2.4	0.463	88.6					
2.....	167	2.2	4.6	.660	82.9	2.7	1.37344	124.9		
3.....	212	2.8	7.4	.690	73.6	7.1	1.38817	129.5		
4.....	257	3.7	11.1	.717	65.9	11	1.40168	134.1		
5.....	302	3.9	15.0	.743	58.9	16	1.41476	138.2		
6.....	347	3.9	18.9	.764	53.7	19	1.42702	143.2		
7.....	392	3.8	22.7	.782	49.4	21	1.43888	143.8		
8.....	437	4.2	26.9	.797	46.0	23	1.44355	144.6		
9.....	482	4.1	31.0	.812	42.8	24	1.45163	144.9		
10.....	527	4.3	35.3	.829	39.2	28	1.46158	153.9		

Stage 2—Distillation continued at 40 mm. Hg

11.....	392	2.6	37.9	0.857	33.6	37	1.47491	158.7	39	15
12.....	437	5.8	43.7	.871	31.0	40	1.48111	165.4	45	35
13.....	482	4.7	48.4	.886	28.2	44	1.49068	175.3	56	60
14.....	527	5.0	53.4	.904	25.0	49			82	70
15.....	572	5.2	58.6	.914	23.3	51			134	90
Residuum		39.2	97.8	1.017	7.6					

Carbon residue, Conradson: Residuum, 10.8 percent; crude, 4.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	7.4	0.666	81.0	
Total gasoline and naphtha.....	22.7	0.724	64.0	
Kerosene distillate.....	8.3	.804	44.4	
Gas oil.....	12.2	.853	34.4	
Nonviscous lubricating distillate.....	9.5	.878-.907	29.7-24.4	50-100
Medium lubricating distillate.....	5.9	.907-.919	24.4-22.5	100-200
Viscous lubricating distillate.....	-	-	-	Above 200
Residuum.....	39.2	1.017	7.6	
Distillation loss.....	2.2			

Bureau of Mines Bartlesville Laboratory
Sample 69108

Item 69

IDENTIFICATION

Asia
Kuwait

Magwa-Ahmadi field
Burgan, Third Sand, Cretaceous
4,500-4,750 feet

GENERAL CHARACTERISTICS

Gravity, specific, 0.867 Gravity, ° API, 31.7 Pour point, ° F., below 5
Sulfur, percent, 2.21 Color, brownish black
Viscosity, Saybolt Universal at 77°F. 67 sec.; 100°F. 59 sec. Nitrogen, percent, 0.125

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 749 mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122	2.4	2.4	0.638	90.3					
2	167	2.9	5.3	0.658	83.5	1.8	1.37536	126.2		
3	212	3.7	9.0	0.694	72.4	8.9	1.39523	137.3		
4	257	4.6	13.6	0.724	63.9	14	1.40574	138.1		
5	302	4.5	18.1	0.748	57.7	18	1.42004	141.1		
6	347	5.0	23.1	0.769	52.5	21	1.43064	144.8		
7	392	4.3	27.4	0.784	49.0	22	1.43846	146.3		
8	437	4.4	31.8	0.796	46.3	22	1.44466	148.0		
9	482	5.6	37.4	0.811	43.0	24	1.45277	150.4		
10	527	3.7	41.1	0.827	39.6	27	1.46211	154.4		

STAGE 2—Distillation continued at 40 mm. Hg

11	392	4.9	46.0	0.862	32.7	39	1.47371	156.3	41	15
12	437	4.6	50.6	0.868	31.5	38	1.47962	165.5	47	40
13	482	4.5	55.1	0.880	29.3	41	1.48858	171.5	60	55
14	527	4.8	59.9	0.897	26.2	46			87	70
15	572	5.8	65.7	0.906	24.7	47			158	90
Residuum		33.3	99.0	1.001	9.9					

Carbon residue, Conradson: Residuum, 13.2 percent; crude, 5.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.0	0.667	80.5	
Total gasoline and naphtha	27.4	0.727	63.1	
Kerosine distillate	10.0	0.804	44.4	
Gas oil	12.0	0.853	34.4	
Nonviscous lubricating distillate	9.1	0.871-899	31.0-26.0	50-100
Medium lubricating distillate	7.2	0.899-911	26.0-23.8	100-200
Viscous lubricating distillate				Above 200
Residuum	33.3	1.001	9.9	
Distillation loss	1.0			

Bureau of Mines Bartlesville Laboratory
Sample 69111

Item 70

IDENTIFICATION

Asia
Kuwait

Minagish field
Minagish, Cretaceous
9,500-9,800 feet

GENERAL CHARACTERISTICS

Gravity, specific, 0.859 Gravity, ° API, 33.2 Pour point, ° F., below 5
Sulfur, percent, 2.12 Color, brownish black
Viscosity, Saybolt Universal at 77°F. 62 sec.; 100°F. 52 sec. Nitrogen, percent, 0.103

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 744 mm. Hg
First drop, 79 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122	2.1	2.1	0.634	91.7					
2	167	2.9	5.0	0.656	84.2	0.8	1.37164	130.1		
3	212	3.7	8.7	0.683	72.7	8.5	1.39299	132.1		
4	257	4.3	13.0	0.719	65.3	12	1.40372	133.6		
5	302	4.6	17.6	0.745	58.4	17	1.41823	145.8		
6	347	5.3	22.9	0.768	52.7	21	1.43085	146.1		
7	392	4.3	27.2	0.787	48.3	23	1.43922	147.3		
8	437	4.5	31.7	0.796	46.3	22	1.44454	154.0		
9	482	4.5	36.2	0.809	43.4	23	1.45135	147.2		
10	527	4.6	40.8	0.825	40.0	26	1.46030	154.9		

STAGE 2—Distillation continued at 40 mm. Hg

11	392	4.5	45.3	0.850	35.0	34	1.47207	163.7	40	20
12	437	4.7	50.0	0.864	32.0	36	1.47827	165.6	45	55
13	482	6.3	56.3	0.883	28.7	42	1.48811	168.7	71	60
14	527	5.8	62.1	0.896	26.4	45			95	75
15	572	8.3	70.4	0.913	23.2	50			185	90
Residuum		27.7	98.1	1.008	8.9					

Carbon residue, Conradson: Residuum, 12.1 percent; crude, 3.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.7	0.666	80.8	
Total gasoline and naphtha	27.2	0.727	63.2	
Kerosine distillate	13.6	0.810	43.2	
Gas oil	7.9	0.855	34.0	
Nonviscous lubricating distillate	10.9	0.868-897	31.4-26.3	50-100
Medium lubricating distillate	7.8	0.897-916	26.3-23.0	100-200
Viscous lubricating distillate	3.0	0.916-923	23.0-21.8	Above 200
Residuum	27.7	1.008	8.9	
Distillation loss	1.9			

Bureau of Mines Bartlesville Laboratory
Sample 69109

Item 71

IDENTIFICATION

Asia
Kuwait

Raudhatain field
Burgan, Zubair, and Ratawi, Cretaceous
8,000-10,000 feet

GENERAL CHARACTERISTICS

Gravity, specific, 0.861 Gravity, ° API, 32.8 Pour point, ° F., below 5
Sulfur, percent, 2.13 Color, brownish black
Viscosity, Saybolt Universal at 77°F, 60 sec.; 100°F, 51 sec. Nitrogen, percent, 0.102

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure. 749 mm. Hg
First drop, 81. ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis. 100° F.	Cloud test, ° F.
1	122	2.1	2.1	0.641	89.2		1.37805	122.1		
2	167	3.2	5.3	.657	83.9	1.3	1.39048	130.0		
3	212	3.7	9.0	.699	70.9	11	1.40615	134.0		
4	257	4.7	13.7	.722	64.5	13	1.41989	139.9		
5	302	5.7	19.4	.748	57.7	18	1.43007	141.7		
6	347	4.2	23.6	.766	53.2	20	1.43730	143.2		
7	392	4.6	28.2	.782	49.4	21	1.44341	145.6		
8	437	4.7	32.9	.794	46.7	21	1.45176	149.3		
9	482	5.0	37.9	.808	43.6	22	1.46088	154.2		
10	527	4.4	42.3	.825	40.0	26				

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis. 100° F.	Cloud test, ° F.
11	392	4.5	46.8	0.851	34.8	34	1.47249	162.3	41	20
12	437	5.5	52.3	.864	32.3	36	1.47870	165.0	47	40
13	482	5.6	57.9	.882	28.9	42	1.48856	166.6	61	65
14	527	4.7	62.6	.893	26.6	45			93	75
15	572	5.3	67.9	.907	24.5	47			163	95
Residuum		30.9	98.8	.996	10.6					

Carbon residue, Conradson: Residuum, 12.8 percent; crude, 4.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.0	0.671	79.5	
Total gasoline and naphtha	28.2	0.727	63.1	
Kerosine distillate	14.1	.809	43.5	
Gas oil	8.4	.856	33.8	
Nonviscous lubricating distillate	10.0	.868-.896	31.5-26.4	50-100
Medium lubricating distillate	7.1	.876-.913	26.4-23.4	100-200
Viscous lubricating distillate	0.1	.913-.913	23.4-23.4	Above 200
Residuum	30.9	.996	10.6	
Distillation loss	1.2			

Bureau of Mines Bartlesville Laboratory
Sample 69110

Item 72

IDENTIFICATION

Asia
Kuwait

Sabiriyah field
Burgan, Cretaceous
8,000-8,200 feet

GENERAL CHARACTERISTICS

Gravity, specific, 0.865 Gravity, ° API, 32.1 Pour point, ° F., below 5
Sulfur, percent, 1.82 Color, brownish black
Viscosity, Saybolt Universal at 77°F, 57 sec.; 100°F, 51 sec. Nitrogen, percent, 0.096

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure. 744 mm. Hg
First drop, 79. ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis. 100° F.	Cloud test, ° F.
1	122	1.1	1.1	0.640	89.6		1.37548	123.5		
2	167	2.2	3.3	.660	82.9	2.7	1.39200	126.2		
3	212	3.3	6.6	.699	70.9	11	1.40585	136.5		
4	257	4.7	11.3	.724	63.9	14	1.41960	139.9		
5	302	5.6	16.9	.748	57.7	18	1.42985	145.0		
6	347	5.2	22.1	.768	52.7	21	1.43714	145.3		
7	392	4.9	27.0	.782	49.4	21	1.44335	145.8		
8	437	4.9	31.9	.793	46.9	21	1.45105	146.3		
9	482	5.0	36.9	.806	44.1	22	1.45954	156.3		
10	527	4.6	41.5	.823	40.4	25				

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis. 100° F.	Cloud test, ° F.
11	392	3.6	45.1	0.850	35.0	34	1.47029	158.9	39	15
12	437	6.6	51.1	.858	33.4	34	1.47519	158.3	44	35
13	482	4.6	55.7	.876	30.0	39	1.48446	169.5	55	50
14	527	4.6	60.3	.886	28.2	40	1.49259	183.2	73	65
15	572	6.1	66.4	.897	26.2	43			116	80
Residuum		33.1	99.5	.986	12.0					

Carbon residue, Conradson: Residuum, 11.8 percent; crude, 4.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	6.6	0.676	77.8	
Total gasoline and naphtha	27.0	0.736	60.7	
Kerosine distillate	14.5	.807	43.8	
Gas oil	9.5	.856	33.9	
Nonviscous lubricating distillate	10.4	.868-.893	31.6-27.0	50-100
Medium lubricating distillate	5.0	.893-.903	27.0-25.2	100-200
Viscous lubricating distillate	-			Above 200
Residuum	33.1	.986	12.0	
Distillation loss	0.5			

Bureau of Mines Bartlesville Laboratory
Sample 67065

Item 73

IDENTIFICATION

Wafra field
Ratawi, Cretaceous

Asia
Neutral Zone

GENERAL CHARACTERISTICS

Gravity, specific, ... 0.909 Gravity, ° API, ... 24.2 Pour point, ° F, ... below 5
Sulfur, percent, ... 3.91 Color, ... brownish black
Viscosity, Saybolt Universal at 100°F, 186 sec.; 130°F, 105 sec. Nitrogen, percent, ... 0.145

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Branch 1—Distillation at atmospheric pressure, ... 746 mm. Hg
First drop, ... 81 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.0	2.0	0.639	89.9					
2	167	1.6	3.6	.663	81.9	4.2	1.37216	126.6		
3	212	2.6	6.2	.694	72.4	8.9	1.38877	127.1		
4	257	4.1	10.3	.722	64.5	13	1.40490	133.4		
5	302	3.6	13.9	.749	57.4	18	1.41937	138.4		
6	347	3.5	17.4	.770	52.3	22	1.43030	143.3		
7	392	3.8	21.2	.787	48.3	23	1.43930	145.6		
8	437	3.8	25.0	.799	45.6	23	1.44668	146.5		
9	482	4.2	29.2	.817	41.7	27	1.45501	150.4		
10	527	5.0	34.2	.837	37.6	31	1.46539	160.1		

Branch 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	1.2	35.4	0.863	32.5	40	1.47819	165.7	40	25
12	437	4.8	40.2	.876	30.0	42	1.48322	171.9	46	55
13	482	4.2	44.4	.888	27.8	45	1.49147	-	56	60
14	527	4.5	48.9	.905	24.9	49	-	-	82	70
15	572	5.3	54.2	.915	23.1	51	-	-	150	90
Residuum		45.0	99.2	1.027	6.3					

Carbon residue, Conradson: Residuum, 13.6 percent; crude, 6.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	6.2	0.668	80.2	
Total gasoline and naphtha	21.2	0.730	62.2	
Kerosene distillate	8.0	.808	43.5	
Gas oil	10.4	.855	34.0	
Nonviscous lubricating distillate	8.3	.881-.908	29.1-24.4	50-100
Medium lubricating distillate	6.3	.908-.920	24.4-22.2	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	45.0	1.027	6.3	
Distillation loss	0.8			

Bureau of Mines Bartlesville Laboratory
Sample 70003

Item 74

IDENTIFICATION

Idd-el-Shargi field
Cretaceous

Asia
Qatar

GENERAL CHARACTERISTICS

Gravity, specific, ... 0.861 Gravity, ° API, ... 32.8 Pour point, ° F, ... 10
Sulfur, percent, ... 1.99 Color, ... brownish black
Viscosity, Saybolt Universal at 77°F, 45 sec.; 100°F, 42 sec. Nitrogen, percent, ... 0.069

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Branch 1—Distillation at atmospheric pressure, ... 753 mm. Hg
First drop, ... 82 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	1.7	1.7	0.630	93.1					
2	167	2.7	4.4	.668	80.3	6.5	1.39619	134.7		
3	212	4.0	8.4	.706	68.9	15	1.39977	137.9		
4	257	5.3	13.7	.732	61.8	18	1.41138	141.2		
5	302	5.2	18.9	.756	55.7	22	1.42299	143.1		
6	347	4.7	23.6	.774	51.3	23	1.43270	145.6		
7	392	4.8	28.4	.788	48.1	24	1.44028	148.1		
8	437	5.3	33.7	.800	45.4	24	1.44709	150.6		
9	482	5.3	39.0	.814	42.3	25	1.45533	153.1		
10	527	4.5	43.5	.831	38.8	29	1.46431	159.6		

Branch 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	6.3	49.8	0.854	34.2	36	1.47633	169.5	40	15
12	437	5.5	55.3	.872	30.8	40	1.48486	174.3	47	40
13	482	6.3	61.6	.892	27.1	46	1.49676	185.1	64	65
14	527	4.9	66.5	.909	24.2	51	-	-	103	75
15	572	4.0	70.5	.918	22.6	53	-	-	167	90
Residuum		27.9	98.4	.995	10.7					

Carbon residue, Conradson: Residuum, 11.9 percent; crude, 3.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.4	0.678	77.1	
Total gasoline and naphtha	28.4	0.737	60.5	
Kerosene distillate	10.6	.807	43.8	
Gas oil	14.6	.851	34.8	
Nonviscous lubricating distillate	10.0	.876-.908	30.1-24.4	50-100
Medium lubricating distillate	6.9	.908-.922	24.4-22.0	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	27.9	.995	10.7	
Distillation loss	1.6			

Bureau of Mines Bartlesville Laboratory Item 75
Sample 70002

IDENTIFICATION

Asia
Qatar

Maydan-Mahzan field
Jurassic

GENERAL CHARACTERISTICS

Gravity, specific, ... 0.834 Gravity, ° API, ... 38.2 Pour point, ° F., below 5
Sulfur, percent, ... 1.48 Color, ... brownish black
Viscosity, Saybolt Universal at 77°F., 42 sec.; 100°F., 39 sec. Nitrogen, percent, ... 0.039

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, ... 748 mm. Hg
First drop, ... 82 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1.....	122	3.4	3.4	0.640	85.6					
2.....	167	3.7	7.1	.665	81.3	5.1	1.37453	129.4		
3.....	212	4.7	11.8	.705	69.2	14	1.39499	132.9		
4.....	257	5.8	17.6	.734	61.3	19	1.41150	138.0		
5.....	302	6.3	23.9	.759	54.9	23	1.42547	144.6		
6.....	347	6.2	30.1	.778	50.4	25	1.43550	148.6		
7.....	392	5.5	35.6	.791	47.4	25	1.44254	150.8		
8.....	437	5.3	40.9	.803	44.7	25	1.44802	152.8		
9.....	482	5.6	46.5	.815	42.1	26	1.45589	156.2		
10.....	527	5.3	51.8	.831	38.8	29	1.46436	156.5		

STAGE 2—Distillation continued at 40 mm. Hg

11.....	392	3.7	55.5	0.852	34.6	35	1.47410	163.6	39	15
12.....	437	6.9	62.4	.861	32.8	35	1.47921	168.3	46	35
13.....	482	5.4	67.8	.878	29.7	40			57	70
14.....	527	5.7	73.5	.891	27.3	43			82	80
15.....	572	5.3	78.8	.902	25.4	45			-	100
Residuum		19.7	98.5	.976	13.5					

Carbon residue, Conradson: Residuum, 9.3 percent; crude, 2.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	11.8	0.674	78.5	
Total gasoline and naphtha.....	35.6	0.735	61.0	
Kerosine distillate.....	10.9	.809	43.4	
Gas oil.....	14.7	.848	35.4	
Nonviscous lubricating distillate.....	11.1	.867-.894	31.7-26.7	50-100
Medium lubricating distillate.....	6.5	.894-.907	26.7-24.5	100-200
Viscous lubricating distillate.....	-	-	-	Above 200
Residuum.....	19.7	.976	13.5	
Distillation loss.....	1.5			

Bureau of Mines Bartlesville Laboratory Item 76
Sample 57010

IDENTIFICATION

Asia
Saudi Arabia

Abqaiq field
Arab C, Clastic, Jurassic

GENERAL CHARACTERISTICS

Gravity, specific, ... 0.883 Gravity, ° API, ... 28.8 Pour point, ° F., below 5
Sulfur, percent, ... 2.76 Color, ... greenish black
Viscosity, Saybolt Universal at 77°F., 120 sec.; 100°F., 77 sec. Nitrogen, percent, ... 0.168

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, ... 752 mm. Hg
First drop, ... 82 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1.....	122	2.6	2.6	0.637	90.6					
2.....	167	2.1	4.7	.658	83.6	1.8	1.36543	121.4		
3.....	212	2.8	7.5	.691	73.3	7.5	1.38871	121.0		
4.....	257	3.8	11.3	.720	65.0	12	1.40437	125.6		
5.....	302	4.0	15.3	.748	57.7	18	1.41850	130.1		
6.....	347	4.0	19.3	.766	53.2	20	1.42936	142.3		
7.....	392	3.6	22.9	.783	49.2	22	1.43718	152.1		
8.....	437	4.2	27.1	.796	46.3	22	1.44466	144.3		
9.....	482	4.5	31.6	.811	43.0	24	1.45250	142.0		
10.....	527	5.0	36.6	.829	39.2	28	1.46273	146.9		

STAGE 2—Distillation continued at 40 mm. Hg

11.....	392	2.6	39.2	0.849	35.2	33	1.47397	160.2	39	15
12.....	437	4.8	44.0	.858	33.4	34	1.48019	165.0	43	35
13.....	482	5.2	49.2	.880	29.3	41	1.49036	174.1	54	50
14.....	527	4.5	53.7	.901	25.6	48	1.50118	181.0	74	65
15.....	572	5.8	59.5	.918	22.6	53			130	80
Residuum		37.8	97.3	1.018	7.5					

Carbon residue, Conradson: Residuum, 9.8 percent; crude, 4.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	7.5	0.663	81.9	
Total gasoline and naphtha.....	22.9	0.724	63.9	
Kerosine distillate.....	8.7	.804	44.5	
Gas oil.....	13.4	.848	35.4	
Nonviscous lubricating distillate.....	8.9	.873-.909	30.6-24.2	50-100
Medium lubricating distillate.....	5.6	.909-.927	24.2-21.1	100-200
Viscous lubricating distillate.....	-	-	-	Above 200
Residuum.....	37.8	1.018	7.5	
Distillation loss.....	2.7			

Bureau of Mines Bartlesville Laboratory
Sample 70063

Item 77

IDENTIFICATION

Abqoiq field
Arab C, Clastic, Jurassic

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.840 Gravity, ° API, 37.0 Pour point, ° F., below 5
Sulfur, percent, 1.30 Color, brownish green
Viscosity, Saybolt Universal at 77°F., 43 sec.; 100°F., 40 sec. Nitrogen, percent, 0.042

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 742 mm. Hg
First drop, 84 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	3.2								
2	167	3.2	3.2	0.664	81.6	-	1.37678	132.5		
3	212	4.1	7.3	.695	72.1	9.4	1.39236	133.3		
4	257	5.5	12.8	.723	64.2	14	1.40753	136.4		
5	302	5.4	18.2	.749	57.4	18	1.42120	148.7		
6	347	6.2	24.4	.769	52.5	21	1.43213	148.8		
7	392	5.9	30.3	.784	49.0	22	1.43969	149.9		
8	437	4.7	35.0	.794	46.7	21	1.44526	150.8		
9	482	5.2	40.2	.807	43.8	22	1.45258	151.4		
10	527	6.3	46.5	.826	39.8	26	1.46217	153.2		

Stage 2—Distillation continued at 40 mm. Hg

11	392	5.4	51.9	0.854	34.2	36	1.46924	155.4	42	20
12	437	5.6	57.5	.867	31.7	38	1.47576	157.7	48	60
13	482	6.9	64.4	.885	28.4	43	1.49120	164.9	67	70
14	527	5.3	69.7	.897	26.2	46			102	85
15	572	7.3	77.0	.918	22.6	53			198	95
Residue		19.4	96.4	.981	12.7					

Carbon residuo, Conradsen: Residue, 11.4 percent; crude, 2.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	7.3	0.681	76.2	
Total gasoline and naphtha	30.3	0.739	60.0	
Kerosine distillate	9.9	.801	45.2	
Gas oil	15.2	.845	36.0	
Nonviscous lubricating distillate	11.3	.869-.896	31.4-26.4	50-100
Medium lubricating distillate	6.8	.896-.918	26.4-22.6	100-200
Viscous lubricating distillate	3.5	.918-.930	22.6-20.6	Above 200
Residue	19.4	.981	12.7	
Distillation loss	3.6			

Bureau of Mines Bartlesville Laboratory
Sample 70067

Item 78

IDENTIFICATION

Abu Sa'Fah field

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.884 Gravity, ° API, 28.6 Pour point, ° F., 20
Sulfur, percent, 2.61 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 113 sec.; 100°F., 73 sec. Nitrogen, percent, 0.232

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 86 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	1.2	1.2	0.633	92.0					
2	167	2.2	3.4	.660	82.9	2.7	1.37520	122.0		
3	212	3.4	6.8	.697	71.5	10	1.39224	122.3		
4	257	3.7	10.5	.725	63.7	15	1.40728	136.2		
5	302	4.3	14.8	.748	57.7	18	1.42079	139.8		
6	347	4.5	19.3	.770	52.3	22	1.43204	146.3		
7	392	5.0	24.3	.786	48.5	23	1.44051	150.4		
8	437	4.0	28.3	.798	45.8	23	1.44739	151.1		
9	482	6.0	34.3	.814	42.3	25	1.45646	154.9		
10	527	4.4	38.7	.830	39.0	28	1.46595	161.9		

Stage 2—Distillation continued at 40 mm. Hg

11	392	3.4	42.1	0.860	33.0	38	1.47669	168.2	40	20
12	437	5.8	47.9	.871	31.0	40	1.48248	170.6	47	40
13	482	5.7	53.6	.893	27.0	47	1.49456	172.2	64	70
14	527	6.6	60.2	.904	25.0	49			100	90
15	572	3.5	63.7	.929	20.8	58				100
Residue		35.1	98.8	1.015	7.9					

Carbon residuo, Conradsen: Residue, 11.9 percent; crude, 4.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	6.8	0.674	78.5	
Total gasoline and naphtha	24.3	0.736	60.9	
Kerosine distillate	10.0	.808	43.7	
Gas oil	11.7	.852	34.6	
Nonviscous lubricating distillate	10.9	.875-.904	30.2-25.0	50-100
Medium lubricating distillate	6.8	.904-.938	25.0-19.4	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residue	35.1	1.015	7.9	
Distillation loss	1.2			

1/ Distillation discontinued at 554°F.

Bureau of Mines Bartlesville Laboratory
Sample 70070

Item 79

IDENTIFICATION

Berri field

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.875 Gravity, ° API, 30.2 Pour point, ° F., below 5
Sulfur, percent, 2.24 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 80 sec.; 100°F., 58 sec. Nitrogen, percent, 0.206

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 744 mm. Hg
First drop, 79 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1.....	122									
2.....	167	2.4	2.4	0.665	81.3		1.37882	132.6		
3.....	212	3.1	5.5	.693	72.7	8.5	1.39100	133.0		
4.....	257	4.3	9.8	.720	65.0	12	1.40553	134.2		
5.....	302	4.9	14.7	.746	58.2	17	1.51960	141.8		
6.....	347	4.6	19.3	.766	53.2	20	1.43045	144.1		
7.....	392	5.6	24.9	.781	49.7	21	1.43840	147.2		
8.....	437	4.6	29.5	.792	47.2	20	1.44426	147.0		
9.....	482	5.0	34.5	.805	44.3	21	1.45163	149.7		
10.....	527	5.0	39.5	.822	40.6	24	1.46174	157.7		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
11.....	392	5.0	44.5	0.854	34.2	36	1.47376	164.7	41	30
12.....	437	6.0	50.5	.867	31.7	38	1.47996	168.0	47	50
13.....	482	7.3	57.8	.885	28.4	43	1.49152	174.0	64	60
14.....	527	5.3	63.1	.900	25.7	47			102	75
15.....	572	4.8	67.9	.910	24.0	49			205	95
Residuum		31.7	99.6	1.006	9.2					

Carbon residue, Conradson: Residuum, 11.7 percent; crude, 4.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	5.5	0.681	76.4	
Total gasoline and naphtha	24.9	0.739	60.1	
Kerosine distillate	14.6	.807	43.9	
Gas oil	9.2	.859	33.2	
Nonviscous lubricating distillate	11.4	.870-.899	31.1-25.9	50-100
Medium lubricating distillate	5.1	.899-.910	25.9-24.1	100-200
Viscous lubricating distillate	2.7	.910-.915	24.1-23.2	Above 200
Residuum	31.7	1.006	9.2	
Distillation loss	0.4			

Bureau of Mines Bartlesville Laboratory
Sample 70064

Item 80

IDENTIFICATION

Fadhili field
Jurassic

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.841 Gravity, ° API, 36.8 Pour point, ° F., below 5
Sulfur, percent, 1.25 Color, brownish green
Viscosity, Saybolt Universal at 77°F., 46 sec.; 100°F., 42 sec. Nitrogen, percent, 0.029

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 147 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1.....	122	1.4	1.4	0.633	92.0					
2.....	167	2.1	3.5	.665	81.3	5.1	1.38380	127.3		
3.....	212	3.9	7.4	.700	70.6	12	1.39278	132.5		
4.....	257	4.6	12.0	.725	63.7	15	1.40825	136.5		
5.....	302	5.3	17.3	.749	57.4	18	1.42090	144.4		
6.....	347	6.1	23.4	.769	52.5	21	1.43196	145.2		
7.....	392	5.3	28.7	.783	49.2	22	1.43922	148.4		
8.....	437	5.5	34.2	.793	46.9	21	1.44457	148.5		
9.....	482	5.6	39.8	.807	43.8	22	1.45184	151.3		
10.....	527	5.0	44.8	.821	40.9	24	1.46062	154.5		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
11.....	392	5.3	50.1	0.852	34.6	35	1.47071	162.4	40	20
12.....	437	5.9	56.0	.860	33.0	35	1.47592	166.2	45	50
13.....	482	8.4	64.4	.879	29.5	40	1.48718	170.7	63	60
14.....	527	5.8	70.2	.893	27.0	44			100	70
15.....	572	5.8	76.0	.905	24.9	46			192	80
Residuum		22.2	98.2	.959	16.1					

Carbon residue, Conradson: Residuum, 7.7 percent; crude, 1.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	7.4	0.677	77.4	
Total gasoline and naphtha	28.7	0.737	60.4	
Kerosine distillate	16.1	.807	43.9	
Gas oil	10.2	.856	33.9	
Nonviscous lubricating distillate	12.3	.865-.893	32.0-27.0	50-100
Medium lubricating distillate	6.3	.893-.906	27.0-24.7	100-200
Viscous lubricating distillate	2.4	.906-.911	24.7-23.8	Above 200
Residuum	22.2	.959	16.1	
Distillation loss	1.8			

Bureau of Mines . . . Bartlesville . . . Laboratory Item 81
Sample 53072

IDENTIFICATION

Ghawar ('Ain Dar) field
Arab D, Clastic, Jurassic
5,900 - 6,200 feet

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.857 Gravity, ° API, 33.6 Pour point, ° F., below 5
Sulfur, percent, 1.66 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 49 sec. Nitrogen, percent, _____

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 750 mm. Hg
First drop, 81 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122	2.0	2.0	0.627	94.2					
2	167	2.6	4.6	.661	82.6	3.2	1.37359	123.8		
3	212	3.6	8.2	.694	72.4	8.9	1.39023	128.0		
4	257	4.3	12.5	.722	64.5	13	1.40506	132.9		
5	302	4.9	17.4	.746	58.2	17	1.41844	138.4		
6	347	5.3	22.7	.767	53.0	20	1.43007	143.0		
7	392	5.1	27.8	.783	49.2	22	1.43870	144.7		
8	437	4.9	32.7	.796	46.3	22	1.44529	144.7		
9	482	5.0	37.7	.810	43.2	23	1.45248	148.1		
10	527	6.6	44.3	.828	39.4	27	1.46270	155.9		

Stage 2—Distillation continued at 40 mm. Hg

11	392	3.3	47.6	0.850	35.0	34	1.47150	158.0	39	20
12	437	5.6	53.2	.859	33.2	34	1.47954	161.1	43	30
13	482	5.6	58.8	.873	30.6	37			53	45
14	527	5.3	64.1	.892	27.1	43			76	65
15	572	6.0	70.1	.903	25.2	46			130	85
Residuum		29.8	99.9	.977	13.3					

Carbon residue, Conradson: Residuum, 11.3 percent; crude, 3.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.2	0.667	80.6	
Total gasoline and naphtha	27.8	0.730	62.3	
Kerosine distillate	9.9	.803	44.7	
Gas oil	16.6	.846	35.8	
Nonviscous lubricating distillate	9.7	.869-.901	31.3-25.6	50-100
Medium lubricating distillate	6.1	.901-.909	25.6-24.2	100-200
Viscous lubricating distillate				Above 200
Residuum	22.8	.977	13.3	
Distillation loss	0.1			

Bureau of Mines . . . Bartlesville . . . Laboratory Item 82
Sample 57007

IDENTIFICATION

Ghawar ('Ain Dar) field
Arab D, Clastic, Jurassic

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.853 Gravity, ° API, 34.4 Pour point, ° F., below 5
Sulfur, percent, 1.62 Color, greenish black
Viscosity, Saybolt Universal at 100°F., 48 sec. Nitrogen, percent, 0.101

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 755 mm. Hg
First drop, 84 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122	2.9	2.9	0.645	87.9					
2	167	2.7	5.6	.658	83.6	1.8	1.37802	122.3		
3	212	3.6	9.2	.694	72.4	8.9	1.39005	123.8		
4	257	4.4	13.6	.723	64.2	14	1.40499	131.4		
5	302	4.9	18.5	.746	58.2	17	1.41890	133.8		
6	347	5.0	23.5	.767	53.0	20	1.42925	132.5		
7	392	5.0	28.5	.782	49.5	21	1.43712	135.5		
8	437	4.5	33.0	.796	46.3	22	1.44463	136.1		
9	482	5.1	38.1	.809	43.4	23	1.45181	148.8		
10	527	5.9	44.0	.829	39.2	28	1.46262	153.2		

Stage 2—Distillation continued at 40 mm. Hg

11	392	3.9	47.9	0.848	35.4	33	1.47472	161.0	40	20
12	437	5.8	53.7	.860	33.0	35	1.48027	166.4	45	40
13	482	5.1	58.8	.880	29.3	41	1.48991	166.2	57	50
14	527	5.0	63.8	.894	26.8	44	1.49917	171.8	81	65
15	572	5.6	69.4	.910	24.0	49			140	80
Residuum		29.2	98.6	.984	12.3					

Carbon residue, Conradson: Residuum, 10.6 percent; crude, 3.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.2	0.668	80.3	
Total gasoline and naphtha	28.5	0.727	63.1	
Kerosine distillate	9.5	.803	44.7	
Gas oil	15.0	.845	36.0	
Nonviscous lubricating distillate	10.0	.868-.899	31.5-25.9	50-100
Medium lubricating distillate	6.3	.899-.918	25.9-22.6	100-200
Viscous lubricating distillate				Above 200
Residuum	29.2	.984	12.3	
Distillation loss	1.4			

Bureau of Mines Bartlesville Laboratory Item 83
Sample 57005

IDENTIFICATION

Ghawar (Haradh) field
Arab D, Clastic, Jurassic

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.861 Gravity, ° API, 32.8 Pour point, ° F., below 5
Sulfur, percent, 2.14 Color, greenish black
Viscosity, Saybolt Universal at 77°F., 65 sec.; 100°F., 52 sec. Nitrogen, percent, 0.114

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure. 743 mm. Hg
First drop, 73 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122	2.6	2.6	0.635	91.3					
2	167	2.6	5.2	.661	82.6	3.2	1.37360	121.2		
3	212	3.3	8.5	.674	72.4	8.9	1.39005	124.2		
4	257	4.3	12.8	.721	64.8	13	1.40449	129.6		
5	302	4.2	17.0	.745	58.4	17	1.41721	132.8		
6	347	6.2	23.2	.768	52.7	21	1.43007	139.1		
7	392	4.9	28.1	.786	48.5	23	1.43986	142.7		
8	437	5.0	33.1	.800	45.4	24	1.44625	144.3		
9	482	4.5	37.6	.815	42.1	26	1.45508	148.2		
10	527	6.2	43.8	.835	38.0	31	1.46603	156.7		

STAGE 2—Distillation continued at 40 mm. Hg

11	392	2.7	46.5	0.855	34.0	36	1.47885	165.0	41	15
12	437	4.6	51.1	.866	31.9	37	1.48312	167.3	46	35
13	482	4.8	55.9	.882	28.9	42	1.49176	170.2	56	50
14	527	5.7	61.6	.901	25.6	48	1.50190	—	81	65
15	572	5.2	66.8	.915	23.1	51			150	80
Residuum		30.9	97.7	.996	10.6					

Carbon residue, Conradson: Residuum, 7.1 percent; crude, 2.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.5	0.666	81.0	
Total gasoline and naphtha	28.1	0.730	62.3	
Kerosine distillate	9.5	.807	43.8	
Gas oil	13.2	.849	35.2	
Nonviscous lubricating distillate	9.5	.873-.905	30.6-24.9	50-100
Medium lubricating distillate	6.5	.905-.922	24.9-22.0	100-200
Viscous lubricating distillate				Above 200
Residuum	30.9	.996	10.6	
Distillation loss	2.3			

Bureau of Mines Bartlesville Laboratory Item 84
Sample 57012

IDENTIFICATION

Ghawar (Huiya) field
Arab D, Clastic, Jurassic

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.864 Gravity, ° API, 32.3 Pour point, ° F., below 5
Sulfur, percent, 2.14 Color, greenish black
Viscosity, Saybolt Universal at 77°F., 68 sec.; 100°F., 55 sec. Nitrogen, percent, 0.110

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure. 743 mm. Hg
First drop, 73 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122	2.6	2.6	0.639	89.9					
2	167	2.7	5.3	.667	80.6	6.1	1.37607	126.9		
3	212	3.4	8.7	.700	70.6	12	1.39321	127.6		
4	257	4.9	13.6	.728	62.9	16	1.40756	130.8		
5	302	4.4	18.0	.751	56.9	19	1.42058	135.6		
6	347	5.4	23.4	.771	52.0	22	1.43133	136.6		
7	392	5.0	28.4	.788	48.1	24	1.43995	137.1		
8	437	4.3	32.7	.800	45.4	24	1.44731	140.6		
9	482	5.0	37.7	.815	42.1	26	1.45538	141.4		
10	527	7.1	44.8	.834	38.2	30	1.46659	157.0		

STAGE 2—Distillation continued at 40 mm. Hg

11	392	1.7	46.5	0.857	33.6	37	1.47782	160.7	41	15
12	437	4.5	51.0	.865	32.1	37	1.48246	159.1	45	35
13	482	5.5	56.5	.881	29.1	41	1.49165	165.6	55	55
14	527	4.8	61.3	.899	25.9	47			77	70
15	572	6.0	67.3	.916	23.0	52			145	85
Residuum		31.4	98.7	.995	10.7					

Carbon residue, Conradson: Residuum, 10.7 percent; crude, 3.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.7	0.672	79.1	
Total gasoline and naphtha	28.4	0.733	61.5	
Kerosine distillate	9.3	.808	43.6	
Gas oil	13.7	.848	35.4	
Nonviscous lubricating distillate	9.4	.873-.905	30.6-24.9	50-100
Medium lubricating distillate	6.5	.905-.925	24.9-21.5	100-200
Viscous lubricating distillate				Above 200
Residuum	31.4	.995	10.7	
Distillation loss	1.3			

Bureau of Mines Bartlesville Laboratory Item 85
Sample 57009

IDENTIFICATION

Ghawar (Shedgum) field
Arab D, Clastic, Jurassic

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.855 Gravity, ° API, 34.0 Pour point, ° F., below 5
Sulfur, percent, 1.85 Color, greenish black
Viscosity, Saybolt Universal at 77°F., 60 sec.; 100°F., 51 sec. Nitrogen, percent, 0.098

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 755 mm. Hg
First drop, 86 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum, percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1.....	122	2.6	2.6	0.642	88.9					
2.....	167	2.7	5.3	.658	83.6	1.8	1.37297	126.9		
3.....	212	3.3	8.6	.692	73.0	8.0	1.38841	123.3		
4.....	237	4.3	12.9	.720	65.0	12	1.40419	130.6		
5.....	302	4.9	17.8	.744	58.7	16	1.41753	138.6		
6.....	347	5.0	22.8	.766	53.2	20	1.42911	142.9		
7.....	392	5.2	28.0	.782	49.5	21	1.43755	142.5		
8.....	437	4.8	32.8	.795	46.5	22	1.44454	142.5		
9.....	482	4.9	37.7	.808	43.6	22	1.45214	145.3		
10.....	527	5.7	43.4	.825	40.0	26	1.46187	152.5		

Stage 2—Distillation continued at 40 mm. Hg

11.....	392	4.9	48.3	0.846	35.8	32	1.47379	156.8	39	15
12.....	437	5.6	53.9	.864	32.3	37	1.48108	166.9	45	40
13.....	482	5.1	59.0	.878	29.7	40	1.49018	171.1	57	50
14.....	527	5.7	64.7	.892	25.9	47	1.49990	182.6	84	60
15.....	572	5.3	70.0	.911	23.8	49			155	75
Residuum		29.0	99.0	.986	12.0					

Carbon residue, Conradson: Residuum, 7.7 percent; crude, 2.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.6	0.666	81.0	
Total gasoline and naphtha	28.0	0.727	63.1	
Kerosine distillate	15.4	.810	43.2	
Gas oil	10.1	.853	34.4	
Nonviscous lubricating distillate	9.6	.870-.901	31.1-25.6	50-100
Medium lubricating distillate	6.9	.901-.917	25.6-22.8	100-200
Viscous lubricating distillate				Above 200
Residuum	29.0	.986	12.0	
Distillation loss	1.0			

Bureau of Mines Bartlesville Laboratory Item 86
Sample 53066

IDENTIFICATION

Ghawar ('Uthmaniyah) field
Arab D, Clastic, Jurassic
5,900 - 6,200 feet

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.856 Gravity, ° API, 33.8 Pour point, ° F., below 5
Sulfur, percent, 1.94 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 64 sec.; 100°F., 50 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 746 mm. Hg
First drop, 81 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum, percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1.....	122	3.0	3.0	0.631	92.8					
2.....	167	2.7	5.7	.659	83.2	2.3	1.37241	125.4		
3.....	212	3.4	9.1	.695	72.1	9.4	1.39045	127.8		
4.....	237	4.2	13.3	.722	64.5	13	1.40527	132.0		
5.....	302	4.3	17.6	.746	58.2	17	1.41830	138.2		
6.....	347	5.1	22.7	.767	53.0	20	1.42978	143.6		
7.....	392	4.7	27.4	.783	49.2	22	1.43850	143.5		
8.....	437	4.7	32.1	.796	46.3	22	1.44512	146.5		
9.....	482	4.9	37.0	.811	43.0	24	1.45291	148.6		
10.....	527	5.8	42.8	.829	39.2	28	1.46354	159.5		

Stage 2—Distillation continued at 40 mm. Hg

11.....	392	2.1	44.9	0.852	34.6	35	1.47380	162.4	39	20
12.....	437	5.5	50.4	.860	33.0	35	1.48264	163.8	43	30
13.....	482	5.2	55.6	.874	30.4	38			52	45
14.....	527	4.6	60.2	.892	27.1	43			71	65
15.....	572	5.3	65.5	.905	24.9	46			115	80
Residuum		31.9	97.4	.987	11.9					

Carbon residue, Conradson: Residuum, 12.6 percent; crude, 4.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.1	0.663	81.9	
Total gasoline and naphtha	27.4	0.725	63.7	
Kerosine distillate	9.6	.804	44.5	
Gas oil	15.0	.849	35.2	
Nonviscous lubricating distillate	9.2	.871-.900	31.0-25.7	50-100
Medium lubricating distillate	4.3	.900-.911	25.7-23.8	100-200
Viscous lubricating distillate				Above 200
Residuum	31.9	.987	11.9	
Distillation loss	2.6			

Bureau of Mines Bartlesville Laboratory Item 97
Sample 57013

IDENTIFICATION

Ghawar ('Uthmaniyah) field
Arab D, Clastic, Jurassic

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.859 Gravity, ° API, 33.2 Pour point, ° F, below 5
Sulfur, percent, 2.01 Color, greenish black
Viscosity, Saybolt Universal at 77°F, 68 sec.; 100°F, 50 sec. Nitrogen, percent, 0.130

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 755 mm. Hg
First drop, 88 ° F.

Fraction No.	Dist. temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.3	2.3	0.643	88.6					
2	167	2.8	5.6	.662	82.2	3.7	1.37360	121.0		
3	212	3.3	8.9	.696	71.8	10	1.39091	129.7		
4	257	4.3	13.2	.722	64.5	13	1.40487	130.4		
5	302	4.9	18.1	.748	57.7	18	1.41832	133.7		
6	347	6.6	24.7	.770	52.3	22	1.43119	139.7		
7	392	3.3	28.0	.786	48.5	23	1.43930	142.8		
8	437	4.9	32.9	.798	45.8	23	1.44521	141.3		
9	482	5.0	37.9	.811	43.0	24	1.45307	144.2		
10	527	6.1	44.0	.831	38.8	29	1.46388	153.3		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Dist. temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	3.6	47.6	0.849	35.2	33	1.47535	164.0	39	20
12	437	5.1	52.7	.865	32.1	37	1.48088	166.6	44	40
13	482	5.5	58.2	.882	28.9	42	1.49048	170.8	55	50
14	527	5.1	63.3	.900	25.7	47			76	70
15	572	5.7	69.0	.914	23.3	51			135	85
Residuum		29.2	98.2	.924	10.9					

Carbon residue, Conradsen: Residuum, 7.6 percent; crude, 2.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.9	0.669	80.0	
Total gasoline and naphtha	28.0	0.728	62.9	
Kerosine distillate	9.2	.805	44.3	
Gas oil	15.3	.848	35.4	
Nonviscous lubricating distillate	9.8	.875-.905	30.2-24.9	50-100
Medium lubricating distillate	6.0	.905-.921	24.9-22.1	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	29.2	.924	10.9	
Distillation loss	1.8			

Bureau of Mines Bartlesville Laboratory Item 88
Sample 70062

IDENTIFICATION

Ghawar field
Arab D, Clastic, Jurassic

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.859 Gravity, ° API, 33.2 Pour point, ° F, below 5
Sulfur, percent, 1.71 Color, greenish black
Viscosity, Saybolt Universal at 77°F, 58 sec.; 100°F, 51 sec. Nitrogen, percent, 0.090

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 742 mm. Hg
First drop, 77 ° F.

Fraction No.	Dist. temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	1.6	1.6	0.633	92.0					
2	167	2.5	4.1	.663	81.9	4.2	1.37573	125.7		
3	212	3.2	7.3	.695	72.1	9.4	1.39544	127.8		
4	257	4.1	11.4	.719	65.3	12	1.40583	130.6		
5	302	5.0	16.4	.742	59.2	15	1.41823	130.4		
6	347	5.3	21.7	.764	53.7	19	1.42948	141.8		
7	392	5.4	27.1	.780	49.9	20	1.43803	149.5		
8	437	5.3	32.4	.795	46.5	22	1.44532	153.4		
9	482	5.0	37.4	.809	43.4	23	1.45313	154.2		
10	527	4.6	42.0	.825	40.0	26	1.46222	156.2		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Dist. temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	5.5	47.5	0.857	33.6	37	1.47415	157.3	41	20
12	437	5.7	53.2	.869	31.3	39	1.48085	161.3	47	35
13	482	7.1	60.3	.890	27.5	45	1.49241	166.4	66	60
14	527	4.5	64.8	.904	25.0	49			105	70
15	572	6.1	70.9	.917	22.8	52			188	90
Residuum		27.7	98.6	.921	11.3					

Carbon residue, Conradsen: Residuum, 11.4 percent; crude, 3.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	7.3	0.670	79.6	
Total gasoline and naphtha	27.1	0.731	62.0	
Kerosine distillate	14.9	.809	43.4	
Gas oil	9.4	.861	32.8	
Nonviscous lubricating distillate	10.4	.872-.902	30.7-23.3	50-100
Medium lubricating distillate	6.8	.902-.919	25.3-22.5	100-200
Viscous lubricating distillate	2.3	.919-.924	22.5-21.6	Above 200
Residuum	27.7	.921	11.3	
Distillation loss	1.4			

Bureau of Mines Bartlesville Laboratory Item 89
Sample 57001

IDENTIFICATION

Kharsaniya field
Arab A, Clastic, Jurassic

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.865 Gravity, ° API, 32.1 Pour point, ° F., below 5
Sulfur, percent, 2.38 Color, greenish black
Viscosity, Saybolt Universal at 77°F., 74 sec.; 100°F., 55 sec. Nitrogen, percent, 0.075

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 86 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	3.3	3.3	0.643	88.6					
2	167	2.5	5.8	.672	79.1	8.4	1.36714	131.2		
3	212	1.9	7.7	.702	70.1	13	1.38217	122.5		
4	257	4.2	11.9	.721	64.8	13	1.40138	125.5		
5	302	4.4	16.3	.746	58.2	17	1.41864	131.7		
6	347	4.7	21.0	.766	53.2	20	1.42956	141.2		
7	392	4.2	25.2	.783	49.2	22	1.43798	141.6		
8	437	5.0	30.2	.796	46.3	22	1.44529	142.4		
9	482	3.7	33.9	.811	43.0	24	1.45291	145.2		
10	527	5.7	39.6	.830	39.0	28	1.46262	149.6		

Stage 2—Distillation continued at 40 mm. Hg

11	392	3.4	43.0	0.847	35.6	32	1.47397	164.9	39	20
12	437	5.6	48.6	.862	32.7	36	1.48025	169.6	44	40
13	482	4.7	53.3	.878	29.7	40	1.49048	175.4	54	55
14	527	5.3	58.6	.899	25.9	47			75	70
15	572	5.2	63.8	.913	23.5	50			125	85
Residuum		34.3	98.1	.989	11.6					

Carbon residue, Conradson: Residuum, 9.4 percent; crude, 3.7 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	7.7	0.667	80.6	
Total gasoline and naphtha	29.2	0.728	62.9	
Kerosine distillate	9.7	.802	44.9	
Gas oil	15.1	.847	35.6	
Nonviscous lubricating distillate	9.7	.872-.906	30.8-24.7	50-100
Medium lubricating distillate	5.1	.906-.920	24.7-22.3	100-200
Viscous lubricating distillate				Above 200
Residuum	34.3	.989	11.6	
Distillation loss	1.9			

Bureau of Mines Bartlesville Laboratory Item 90
Sample 57002

IDENTIFICATION

Kharsaniya field
Arab B, Clastic, Jurassic

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.870 Gravity, ° API, 31.1 Pour point, ° F., below 5
Sulfur, percent, 2.49 Color, greenish black
Viscosity, Saybolt Universal at 77°F., 78 sec.; 100°F., 59 sec. Nitrogen, percent, 0.084

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 751 mm. Hg
First drop, 86 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.4	2.4	0.649	86.5					
2	167	2.3	4.7	.660	82.9	2.7	1.36010	123.3		
3	212	3.3	8.0	.697	71.5	10	1.37891	125.2		
4	257	3.8	11.8	.725	63.7	15	1.40388	128.0		
5	302	4.7	16.5	.749	57.4	18	1.41925	137.6		
6	347	4.7	21.2	.770	52.3	22	1.43059	136.6		
7	392	4.6	25.8	.784	49.0	22	1.43863	144.1		
8	437	4.5	30.3	.797	46.0	23	1.44524	140.5		
9	482	4.1	34.4	.813	42.6	25	1.45345	140.9		
10	527	6.1	40.5	.833	38.4	30	1.46374	148.7		

Stage 2—Distillation continued at 40 mm. Hg

11	392	2.6	43.1	0.849	35.2	33	1.47532	164.4	40	20
12	437	6.0	49.1	.869	31.3	39	1.48141	171.1	45	35
13	482	4.9	54.0	.883	28.8	42	1.49130	172.6	56	50
14	527	4.8	58.8	.899	25.9	47			75	65
15	572	5.8	64.6	.913	23.5	50			135	80
Residuum		34.3	98.9	.992	11.1					

Carbon residue, Conradson: Residuum, 11.2 percent; crude, 4.4 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.0	0.672	79.1	
Total gasoline and naphtha	29.8	0.732	61.8	
Kerosine distillate	8.6	.805	44.3	
Gas oil	14.3	.848	35.4	
Nonviscous lubricating distillate	10.0	.875-.905	30.2-24.9	50-100
Medium lubricating distillate	5.9	.905-.921	24.9-22.1	100-200
Viscous lubricating distillate				Above 200
Residuum	34.3	.992	11.1	
Distillation loss	1.1			

Bureau of Mines Bartlesville Laboratory Item 91
Sample 57003

IDENTIFICATION

Kharsaniya field
Arab C, Clastic, Jurassic

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.869 Gravity, ° API, 31.3 Pour point, ° F., below 5
Sulfur, percent, 2.69 Color, greenish black
Viscosity, Saybolt Universal at 77°F., 76 sec.; 100°F., 57 sec. Nitrogen, percent, 0.100

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 741 mm. Hg
First drop, 84 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	1.8	1.8	0.640	89.6					
2	167	2.3	4.1	.658	83.6	1.8	1.38000	120.6		
3	212	3.8	7.9	.698	71.2	11	1.39178	120.3		
4	257	3.3	11.2	.725	63.7	15	1.40618	125.5		
5	302	4.6	15.8	.747	57.2	18	1.41806	131.0		
6	347	4.6	20.4	.767	53.0	20	1.42950	135.6		
7	392	4.4	24.8	.784	49.0	22	1.43795	138.5		
8	437	4.6	29.4	.796	46.3	22	1.44502	143.4		
9	482	4.3	33.7	.810	43.2	23	1.45277	146.8		
10	527	5.6	39.3	.829	39.2	28	1.46315	153.3		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	4.1	43.4	0.852	34.6	35	1.47587	162.0	40	15
12	437	4.6	48.0	.865	32.1	37	1.48221	167.4	45	30
13	482	6.3	54.3	.883	28.8	42	1.49226	171.4	58	45
14	527	4.2	58.5	.902	25.4	48	1.50200	181.1	85	65
15	572	5.7	64.2	.915	23.1	51			145	80
Residuum		34.8	99.0	.993	11.0					

Carbon residue, Conradson: Residuum, 5.1 percent; crude, 2.0 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	7.9	0.673	78.8	
Total gasoline and naphtha	24.8	0.731	62.1	
Kerosine distillate	8.9	.803	44.7	
Gas oil	14.2	.847	35.6	
Nonviscous lubricating distillate	10.0	.872-.905	30.8-24.9	50-100
Medium lubricating distillate	6.3	.905-.919	24.9-22.5	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	34.8	.993	11.0	
Distillation loss	1.0			

Bureau of Mines Bartlesville Laboratory Item 92
Sample 57006

IDENTIFICATION

Kharsaniya field
Arab D, Clastic, Jurassic

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.872 Gravity, ° API, 30.8 Pour point, ° F., below 5
Sulfur, percent, 2.54 Color, greenish black
Viscosity, Saybolt Universal at 77°F., 84 sec.; 100°F., 63 sec. Nitrogen, percent, 0.114

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 751 mm. Hg
First drop, 84 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.8	2.8	0.642	88.9					
2	167	2.3	5.1	.662	82.2	3.7	1.37369	132.6		
3	212	3.1	8.2	.696	71.8	10	1.39060	123.9		
4	257	3.8	12.0	.722	64.5	13	1.40499	131.2		
5	302	4.5	16.5	.747	57.2	18	1.41870	136.3		
6	347	4.5	21.0	.766	53.2	20	1.42993	136.4		
7	392	4.8	25.8	.785	48.8	23	1.43868	142.5		
8	437	3.6	29.4	.796	46.3	22	1.44521	141.7		
9	482	4.7	34.1	.810	43.2	23	1.45252	148.1		
10	527	5.6	39.7	.829	39.2	28	1.46340	155.6		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	3.8	43.5	0.852	34.6	35	1.47698	165.1	40	20
12	437	5.7	49.2	.861	32.8	35	1.48297	168.4	46	40
13	482	4.7	53.9	.887	28.0	44	1.49325	170.6	58	55
14	527	4.6	58.5	.904	25.0	49	1.50269	180.6	81	70
15	572	6.1	64.6	.918	22.6	53			150	85
Residuum		33.4	98.0	1.007	9.0					

Carbon residue, Conradson: Residuum, 9.7 percent; crude, 3.7 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.2	0.668	80.3	
Total gasoline and naphtha	25.8	0.729	62.6	
Kerosine distillate	8.3	.804	44.5	
Gas oil	14.1	.847	35.6	
Nonviscous lubricating distillate	9.7	.870-.908	31.1-24.3	50-100
Medium lubricating distillate	6.7	.908-.924	24.3-21.6	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	33.4	1.007	9.0	
Distillation loss	2.0			

Bureau of Mines Bartlesville Laboratory Item 93
Sample 70068

IDENTIFICATION

Khurais field

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, ... 0.865 Gravity, ° API, ... 32.1 Pour point, ° F., below 5
Sulfur, percent, ... 1.73 Color, ... brownish black
Viscosity, Saybolt Universal at 77°F., 72 sec.; 100°F., 56 sec. Nitrogen, percent, ... 0.307

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, ... 743 mm. Hg
First drop, ... 79 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1.....	122	1.4	1.4	0.631	92.7					
2.....	167	2.3	3.7	.662	82.2	3.7	1.37632	124.5		
3.....	212	3.1	6.8	.685	72.1	9.4	1.39048	126.8		
4.....	257	4.5	11.3	.719	65.3	12	1.40496	128.8		
5.....	302	4.7	16.0	.742	59.2	15	1.41738	143.1		
6.....	347	5.2	21.2	.764	53.7	19	1.42893	143.3		
7.....	392	4.9	26.1	.782	49.4	21	1.43798	147.9		
8.....	437	5.3	31.4	.797	46.0	23	1.44554	148.8		
9.....	482	4.9	36.3	.811	43.0	24	1.45381	149.2		
10.....	527	5.1	41.4	.825	40.0	26	1.46235	159.0		

Stage 2—Distillation continued at 40 mm. Hg

11.....	392	2.9	44.3	0.856	33.8	36	1.47327	163.3	39	15
12.....	437	5.5	49.8	.864	32.3	36	1.47806	164.0	45	30
13.....	482	6.5	56.3	.884	28.6	43	1.48788	164.4	57	60
14.....	527	3.6	59.9	.893	27.0	44			75	80
15.....	572	4.0	63.9	.901	25.5	45			112	95
Residuum		35.4	99.3	.983	12.4					

Carbon residue, Conradson: Residuum, ... 9.8, percent; crude, ... 3.9, percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	6.8	0.671	79.5	
Total gasoline and naphtha.....	26.1	0.731	62.0	
Kerosine distillate.....	15.3	.811	43.0	
Gas oil.....	8.2	.862	32.7	
Nonviscous lubricating distillate.....	11.1	.872-.898	30.7-26.0	50-100
Medium lubricating distillate.....	3.2	.898-.905	26.0-24.8	100-200
Viscous lubricating distillate.....	-	-	-	Above 200
Residuum.....	35.4	.983	12.4	
Distillation loss.....	0.7			

Bureau of Mines Bartlesville Laboratory Item 94
Sample 70069

IDENTIFICATION

Manifa field

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, ... 0.877 Gravity, ° API, ... 29.8 Pour point, ° F., ... 15
Sulfur, percent, ... 2.75 Color, ... brownish black
Viscosity, Saybolt Universal at 77°F., 117 sec.; 100°F., 63 sec. Nitrogen, percent, ... 0.338

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, ... 743 mm. Hg
First drop, ... 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1.....	122	1.4	1.4	0.625	94.9					
2.....	167	1.9	3.3	.656	84.2	0.8	1.37551	122.7		
3.....	212	2.7	6.0	.689	73.9	6.6	1.38817	124.3		
4.....	257	3.6	9.6	.711	67.5	8.0	1.40038	126.6		
5.....	302	3.8	13.4	.735	61.0	12	1.41233	133.8		
6.....	347	4.4	17.8	.756	55.7	15	1.42434	134.0		
7.....	392	4.0	21.8	.773	51.6	17	1.43330	138.4		
8.....	437	5.3	27.1	.786	48.5	17	1.44151	143.4		
9.....	482	3.9	31.0	.805	44.3	21	1.45088	152.1		
10.....	527	5.0	36.0	.823	40.4	25	1.46121	154.8		

Stage 2—Distillation continued at 40 mm. Hg

11.....	392	6.0	42.0	0.862	32.7	39	1.47621	167.8	42	35
12.....	437	5.5	47.5	.877	29.8	43	1.48476	170.0	49	50
13.....	482	4.3	51.8	.894	26.8	47	1.49513	170.1	65	60
14.....	527	5.2	57.0	.904	25.0	49			99	90
15.....	572	5.7	62.7	.918	22.6	53			-	110
Residuum		34.7	97.4	1.998	8.9					

Carbon residue, Conradson: Residuum, ... 14.0, percent; crude, ... 5.6, percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	6.0	0.664	81.7	
Total gasoline and naphtha.....	21.8	0.723	64.3	
Kerosine distillate.....	14.2	.804	44.4	
Gas oil.....	9.1	.866	31.9	
Nonviscous lubricating distillate.....	9.4	.878-.904	29.7-25.0	50-100
Medium lubricating distillate.....	6.6	.904-.921	25.0-22.1	100-200
Viscous lubricating distillate.....	1.6	.921-.925	22.1-21.4	Above 200
Residuum.....	34.7	1.008	8.9	
Distillation loss.....	2.6			

Bureau of Mines Bartlesville Laboratory Item 95
Sample 57018

IDENTIFICATION

Qatif field
Arab C, Clastic, Jurassic

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.881 Gravity, ° API, 29.1 Pour point, ° F., below 5
Sulfur, percent, 2.55 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 83 sec.; 100°F., 66 sec. Nitrogen, percent, 0.109

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 752 mm. Hg
First drop, 84 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum, percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc., 100° F.	Cloud test, ° F.
1.....	122	1.4	1.4	0.634	91.7					
2.....	167	2.2	3.6	.662	82.2	3.7	1.38286	131.7		
3.....	212	2.9	6.5	.695	72.1	9.4	1.39115	125.9		
4.....	257	4.0	10.5	.723	64.2	14	1.40580	129.1		
5.....	302	3.9	14.4	.746	58.2	17	1.41815	136.0		
6.....	347	4.4	18.8	.765	53.5	19	1.42888	135.7		
7.....	392	4.5	23.3	.782	49.5	21	1.43781	141.4		
8.....	437	4.7	28.0	.796	46.3	22	1.44496	144.2		
9.....	482	4.6	32.6	.810	43.2	23	1.45291	148.1		
10.....	527	6.4	39.0	.832	38.6	29	1.46447	150.4		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp., ° F.	Percent	Sum, percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc., 100° F.	Cloud test, ° F.
11.....	392	2.5	41.5	0.850	35.0	34	1.47610	166.0	39	20
12.....	437	4.4	45.9	.861	32.8	35	1.48141	170.5	43	35
13.....	482	6.4	52.3	.879	29.5	40	1.49048	178.4	52	50
14.....	527	4.8	57.1	.900	25.7	47	1.50109	191.6	72	65
15.....	572	5.8	62.9	.915	23.1	51			120	75
Residuum		36.3	99.2	1.010	8.6					

Carbon residue, Conradson: Residuum, 13.2 percent; crude, 5.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	6.5	0.671	79.4	
Total gasoline and naphtha.....	23.3	0.732	61.8	
Kerosine distillate.....	9.3	.803	44.7	
Gas oil.....	15.4	.849	35.2	
Nonviscous lubricating distillate.....	9.7	.875-.908	30.2-24.3	50-100
Medium lubricating distillate.....	5.2	.908-.923	24.3-21.8	100-200
Viscous lubricating distillate.....				Above 200
Residuum.....	36.3	1.010	8.6	
Distillation loss.....	0.8			

Bureau of Mines Bartlesville Laboratory Item 96
Sample 57004

IDENTIFICATION

Safaniya field
Bahrain, Cretaceous

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.889 Gravity, ° API, 27.7 Pour point, ° F., 10
Sulfur, percent, 3.03 Color, greenish black
Viscosity, Saybolt Universal at 77°F., 180 sec.; 100°F., 110 sec. Nitrogen, percent, 0.165

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 752 mm. Hg
First drop, 79 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum, percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc., 100° F.	Cloud test, ° F.
1.....	122	3.1	3.1	0.641	89.3					
2.....	167	1.7	4.8	.665	81.3	5.1	1.37082	120.9		
3.....	212	2.7	7.5	.691	73.3	7.5	1.38292	121.3		
4.....	257	3.2	10.7	.715	66.4	9.9	1.40082	120.4		
5.....	302	3.6	14.3	.739	60.0	14	1.41344	128.4		
6.....	347	4.1	18.4	.759	54.9	16	1.42487	130.6		
7.....	392	3.8	22.2	.779	50.1	20	1.43539	136.4		
8.....	437	4.0	26.2	.794	46.7	21	1.44274	137.8		
9.....	482	4.6	30.8	.811	43.0	24	1.45181	144.2		
10.....	527	6.6	37.4	.832	38.6	29	1.46377	153.9		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp., ° F.	Percent	Sum, percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc., 100° F.	Cloud test, ° F.
11.....	392	3.3	40.7	0.856	33.8	37	1.47687	163.4	42	15
12.....	437	3.8	44.5	.872	30.8	40	1.48267	174.1	48	35
13.....	482	4.9	49.4	.885	28.4	43	1.49246	172.5	62	50
14.....	527	4.3	53.7	.902	25.4	48			95	70
15.....	572	5.5	59.2	.916	23.0	52			175	85
Residuum		39.3	98.5	1.021	7.1					

Carbon residue, Conradson: Residuum, 11.3 percent; crude, 5.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	7.5	0.664	81.6	
Total gasoline and naphtha.....	22.2	0.721	64.8	
Kerosine distillate.....	8.6	.803	44.7	
Gas oil.....	12.5	.846	35.8	
Nonviscous lubricating distillate.....	8.6	.874-.903	30.4-25.2	50-100
Medium lubricating distillate.....	6.2	.903-.920	25.2-22.3	100-200
Viscous lubricating distillate.....	1.1	.920-.923	22.3-21.8	Above 200
Residuum.....	39.3	1.021	7.1	
Distillation loss.....	1.5			

Bureau of Mines Bartlesville Laboratory Item 97
Sample 57011

IDENTIFICATION

Safaniya field
Cretaceous

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.866 Gravity, ° API, 31.9 Pour point, ° F., 15
Sulfur, percent, 2.63 Color, greenish black
Viscosity, Saybolt Universal at 77°F., 73 sec.; 100°F., 56 sec. Nitrogen, percent, 0.102

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 741 mm. Hg
First drop, 84 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.7	2.7	0.645	87.9					
2	167	3.3	6.0	.660	82.9	2.7	1.37496	119.4		
3	212	2.9	8.9	.690	73.6	7.1	1.38793	122.0		
4	257	4.1	13.0	.714	66.7	9.4	1.40049	128.7		
5	302	4.4	17.4	.737	60.5	13	1.41300	131.1		
6	347	5.0	22.4	.760	54.7	17	1.42515	129.6		
7	392	4.2	26.6	.778	50.4	19	1.43517	132.3		
8	437	4.6	31.2	.792	47.2	20	1.44209	141.1		
9	482	4.9	36.1	.807	43.8	22	1.45020	137.1		
10	527	5.0	41.1	.826	39.8	26	1.46054	147.8		

Stage 2—Distillation continued at 40 mm. Hg

11	392	2.4	43.5	0.846	35.8	32	1.47223	160.1	39	20
12	437	5.6	49.1	.862	32.7	36	1.47782	163.4	43	35
13	482	5.1	54.2	.873	30.6	37	1.48723	168.1	53	55
14	527	5.0	59.2	.895	26.6	45			73	70
15	572	5.8	65.0	.911	23.8	49			130	85
Residuum		33.6	98.6	1.005	9.3					

Carbon residue, Conradson: Residuum, 11.0 percent; crude, 4.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.9	0.665	81.3	
Total gasoline and naphtha	26.6	0.720	65.0	
Kerosine distillate	9.5	.800	45.4	
Gas oil	14.1	.845	36.0	
Nonviscous lubricating distillate	9.1	.870-.902	31.1-25.4	50-100
Medium lubricating distillate	5.7	.902-.919	25.4-22.5	100-200
Viscous lubricating distillate				Above 200
Residuum	33.6	1.005	9.3	
Distillation loss	1.4			

Bureau of Mines Bartlesville Laboratory Item 98
Sample 67066

IDENTIFICATION

Safaniya field
Cretaceous

Asia
Saudi Arabia

GENERAL CHARACTERISTICS

Gravity, specific, 0.894 Gravity, ° API, 26.8 Pour point, ° F., 5
Sulfur, percent, 2.97 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 127 sec.; 130°F., 85 sec. Nitrogen, percent, 0.182

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 79 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.6	2.6	0.637	90.6					
2	167	1.9	4.5	.660	82.9	2.7	1.37164	125.5		
3	212	2.9	7.4	.693	72.7	8.5	1.38790	127.0		
4	257	3.2	10.6	.718	65.6	11	1.40213	129.7		
5	302	3.7	14.3	.743	58.9	16	1.41517	135.9		
6	347	4.0	18.3	.764	53.7	19	1.42693	140.9		
7	392	4.0	22.3	.783	49.2	22	1.43649	143.4		
8	437	3.5	25.8	.798	45.8	23	1.44393	144.6		
9	482	4.0	29.8	.812	42.8	24	1.45187	146.7		
10	527	4.9	34.7	.831	38.8	29	1.46177	155.3		

Stage 2—Distillation continued at 40 mm. Hg

11	392	2.3	37.0	0.859	33.2	38	1.47425	162.6	39	25
12	437	4.9	41.9	.869	31.3	39	1.47967	167.4	46	40
13	482	4.7	46.6	.885	28.4	43	1.48858	173.9	57	60
14	527	5.4	52.0	.900	25.7	47			87	70
15	572	2.5	54.5	.909	24.2	48			120	80
Residuum		43.9	98.4	1.012	8.3					

Carbon residue, Conradson: Residuum, 10.3 percent; crude, 5.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	7.4	0.665	81.3	
Total gasoline and naphtha	22.3	0.724	63.8	
Kerosine distillate	7.5	.805	44.2	
Gas oil	11.4	.850	34.9	
Nonviscous lubricating distillate	9.7	.875-.904	30.2-25.1	50-100
Medium lubricating distillate	3.6	.904-.912	25.1-23.7	100-200
Viscous lubricating distillate				Above 200
Residuum	43.9	1.012	8.3	
Distillation loss	1.6			

1/ Distillation discontinued at 536°F.

Bureau of Mines Bartlesville Laboratory Item 99
Sample 65072

IDENTIFICATION

Alton field
Evergreen, Lower Jurassic
6,060 - 6,121 feet

Australia
Queensland

GENERAL CHARACTERISTICS

Gravity, specific, 0.778 Gravity, ° API, 50.4 Pour point, ° F., 20
Sulfur, percent, 0.02 Color, green
Viscosity, Saybolt Universal at 100°F., 34 sec. Nitrogen, percent, 0.002

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 744 mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1.....	122	6.2	6.2	0.627	94.2					
2.....	167	4.3	10.5	0.667	80.6	6.1	1.37523	127.8		
3.....	212	8.5	19.0	0.715	66.4	19	1.39908	127.4		
4.....	257	11.3	30.3	0.741	59.5	22	1.41253	130.8		
5.....	302	7.0	37.3	0.758	55.2	23	1.42279	137.9		
6.....	347	6.2	43.5	0.771	52.0	22	1.43013	140.0		
7.....	392	5.3	48.8	0.781	49.7	21	1.43567	139.1		
8.....	437	5.3	54.1	0.792	47.2	20	1.44112	139.0		
9.....	482	5.6	59.7	0.804	44.5	21	1.44798	142.0		
10.....	527	6.6	66.3	0.816	41.9	22	1.45484	144.5		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
11.....	392	2.6	68.9	0.826	39.8	22	1.46080	144.9	39	50
12.....	437	6.3	75.2	0.830	39.0	20	1.46128	144.8	43	65
13.....	482	5.7	80.9	0.832	38.6	18			50	100
14.....	527	4.1	85.0	0.837	37.6	17			69	105
15.....	572	3.4	88.4	0.841	36.8	16			81	115
Residuum		10.2	98.6	0.905	24.9					

Carbon residue, Conradson: Residuum, 2.5 percent; crude, 0.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	19.0	0.675	78.0	
Total gasoline and naphtha.....	48.8	0.726	63.4	
Kerosine distillate.....	17.5	0.805	44.3	
Gas oil.....	11.8	0.829	39.1	
Nonviscous lubricating distillate.....	10.3	0.832-843	38.6-36.4	50-100
Medium lubricating distillate.....	-	-	-	100-200
Viscous lubricating distillate.....	-	-	-	Above 200
Residuum.....	10.2	0.905	24.9	
Distillation loss.....	1.4			

Bureau of Mines Bartlesville Laboratory Item 100
Sample 65073

IDENTIFICATION

Barrow Island field
Jurassic
6,740 - 6,759 feet

Australia
Western Australia

GENERAL CHARACTERISTICS

Gravity, specific, 0.839 Gravity, ° API, 37.2 Pour point, ° F., 50
Sulfur, percent, 0.02 Color, brownish green
Viscosity, Saybolt Universal at 100°F., 37 sec. Nitrogen, percent, 0.010

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 744 mm. Hg
First drop, 140 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1.....	122									
2.....	167									
3.....	212	3.2	3.2	0.715	66.4	-	1.39953	133.5		
4.....	257	0.5	3.7	0.753	56.4	28	1.42001	142.9		
5.....	302	5.2	8.9	0.776	50.8	31	1.43360	150.5		
6.....	347	5.2	14.1	0.790	47.6	31	1.44076	149.6		
7.....	392	6.0	20.1	0.801	45.2	30	1.44632	148.1		
8.....	437	6.7	26.8	0.817	41.7	32	1.45465	151.4		
9.....	482	9.6	36.4	0.836	37.8	36	1.46484	158.2		
10.....	527	10.2	46.6	0.849	35.2	37	1.47259	160.6		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
11.....	392	6.3	52.9	0.853	34.4	35	1.47888	164.4	42	35
12.....	437	10.2	63.1	0.861	32.8	35	1.47976	161.3	48	55
13.....	482	10.0	73.1	0.865	32.1	34			63	70
14.....	527	6.6	79.7	0.870	31.1	33			90	105
15.....	572	6.4	86.1	0.873	30.6	31			145	120
Residuum		10.8	96.9	0.927	21.1					

Carbon residue, Conradson: Residuum, 2.0 percent; crude, 0.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	3.2	0.715	66.4	
Total gasoline and naphtha.....	20.1	0.777	50.7	
Kerosine distillate.....	6.7	0.817	41.7	
Gas oil.....	32.6	0.848	35.4	
Nonviscous lubricating distillate.....	19.2	0.862-871	32.7-31.0	50-100
Medium lubricating distillate.....	8.5	0.871-874	31.0-30.3	100-200
Viscous lubricating distillate.....	-	-	-	Above 200
Residuum.....	10.8	0.927	21.1	
Distillation loss.....	3.1			

Bureau of Mines Bartlesville Laboratory Item 101
Sample 65068

Cabawin field
Kianga, Upper Permian
10,140 - 10,153 feet

IDENTIFICATION

Australia
Queensland

GENERAL CHARACTERISTICS

Gravity, specific, 0.792 Gravity, ° API, 47.2 Pour point, ° F., 25
Sulfur, percent, 0.05 Color, green
Viscosity, Saybolt Universal at 100°F, 35 sec. Nitrogen, percent, 0.011

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure. 743 mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test ° F.
1	122	3.2	3.2	0.631	92.7					
2	167	4.2	7.4	.668	80.3	6.5	1.37897	129.7		
3	212	8.4	15.8	.721	64.8	22	1.40111	130.3		
4	257	13.0	28.8	.748	57.7	26	1.41581	133.9		
5	302	8.9	37.7	.760	54.7	24	1.42647	139.3		
6	347	6.5	44.2	.778	50.4	25	1.43383	141.2		
7	392	6.4	50.6	.790	47.6	25	1.43986	141.5		
8	437	4.7	55.3	.803	44.7	25	1.44687	141.2		
9	482	5.2	60.5	.816	41.9	26	1.45402	143.6		
10	527	6.3	66.8	.826	39.8	26	1.45962	146.4		

Stage 2—Distillation continued at 40 mm. Hg

11	392	3.1	69.9	0.838	37.4	28	1.46459	148.4	39	45
12	437	5.3	75.2	.841	36.8	26	1.46584	151.3	45	60
13	482	5.4	80.6	.844	36.2	24			53	75
14	527	5.4	86.0	.854	34.2	25			68	90
15	572	3.7	89.7	.860	33.0	25			96	105
Residuum		8.4	98.1	.911	23.8					

Carbon residue, Conradson: Residuum, 1.6 percent; crude, 0.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	15.8	0.689	74.0	
Total gasoline and naphtha	50.6	0.741	59.5	
Kerosene distillate	9.9	.810	43.2	
Gas oil	15.4	.834	38.1	
Nonviscous lubricating distillate	12.6	.843-.861	36.4-32.9	50-100
Medium lubricating distillate	1.2	.861-.862	32.9-32.6	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	8.4	.911	23.8	
Distillation loss	1.9			

Bureau of Mines Bartlesville Laboratory Item 102
Sample 65069

Conloi field
Evergreen, Lower Jurassic
4,314 - 4,320 feet

IDENTIFICATION

Australia
Queensland

GENERAL CHARACTERISTICS

Gravity, specific, 0.879 Gravity, ° API, 29.5 Pour point, ° F., below 5
Sulfur, percent, 0.03 Color, brownish green
Viscosity, Saybolt Universal at 100°F, 44 sec. Nitrogen, percent, 0.010

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure. 743 mm. Hg
First drop, 180 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test ° F.
1	122									
2	167									
3	212									
4	257	1.1	1.1	0.733	61.5	-	1.39953	123.2		
5	302	1.4	2.5	.767	53.0	27	1.42241	127.8		
6	347	3.6	6.1	.796	46.3	34	1.43705	130.3		
7	392	6.7	12.8	.820	41.1	39	1.44935	130.6		
8	437	9.1	21.9	.841	36.8	43	1.45989	133.6		
9	482	11.7	33.6	.860	33.0	47	1.47048	136.7		
10	527	13.3	46.9	.877	29.8	50	1.48029	143.8		

Stage 2—Distillation continued at 40 mm. Hg

11	392	12.5	59.4	0.903	25.2	59	1.49216	153.8	51	Below 5
12	437	9.7	69.1	.907	24.5	57	1.49978	164.0	69	do.
13	482	8.0	77.1	.914	23.3	57	1.50701	-	120	do.
14	527	6.6	83.7	.919	22.5	56	1.51078	-	235	do.
15	572	5.1	88.8	.921	22.1	54		-	425	do.
Residuum		10.2	99.0	.925	21.5					

Carbon residue, Conradson: Residuum, 2.2 percent; crude, 0.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha	12.8	0.800	45.4	
Kerosene distillate	-	-	-	
Gas oil	39.7	.867	31.7	
Nonviscous lubricating distillate	17.1	.903-.911	25.2-23.8	50-100
Medium lubricating distillate	8.6	.911-.917	23.8-22.7	100-200
Viscous lubricating distillate	10.6	.917-.922	22.7-22.0	Above 200
Residuum	10.2	.925	21.5	
Distillation loss	1.0			

Bureau of Mines Bartlesville Laboratory Item 103
Sample 71050

IDENTIFICATION

Halibut field
La Troube, Eocene-Paleocene
7,650 feet

Australia
Offshore

GENERAL CHARACTERISTICS

Gravity, specific, 0.817 Gravity, ° API, 41.7 Pour point, ° F., 50
Sulfur, percent, 0.16 Color, brownish black
Viscosity, Saybolt Universal at 77° F., 40 sec., at 100° F., 36 sec. Nitrogen, percent, 0.012

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 739 mm. Hg
First drop, 82 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.2	2.2	0.650	86.2					
2	167	3.3	5.5	.671	79.4	8.0	1.37793	123.1		
3	212	4.2	9.7	.715	66.4	19	1.40073	123.8		
4	257	8.2	17.9	.741	59.5	22	1.41247	125.1		
5	302	6.3	24.2	.761	54.4	24	1.42394	130.8		
6	347	5.0	29.2	.777	50.6	25	1.43355	143.9		
7	392	4.4	33.6	.791	47.4	25	1.44137	143.2		
8	437	4.4	38.0	.805	44.3	26	1.45000	149.8		
9	482	6.4	44.4	.824	40.2	30	1.46073	154.5		
10	527	6.4	50.8	.840	37.0	33	1.47037	155.4		

Stage 2—Distillation continued at 40 mm. Hg

11	392	5.4	56.2	0.855	34.0	36	1.47798	156.2	39	25
12	437	6.2	62.4	.860	33.0	35	1.48419	157.7	43	50
13	482	6.7	69.1	.865	32.1	34			51	70
14	527	4.5	74.3	.870	31.1	33			60	95
15	572	3.2	77.5	.875	30.2	32			117	110
Residue		18.1	95.6	.932	20.3					

Carbon residue, Conradson: Residue, 3.7 percent; crude, 0.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.7	0.685	75.0	
Total gasoline and naphtha	33.6	0.741	59.6	
Kerosine distillate	10.8	.816	41.9	
Gas oil	21.2	.853	34.4	
Nonviscous lubricating distillate	9.2	.864-.874	32.2-30.5	50-100
Medium lubricating distillate	2.7	.874-.877	30.5-29.8	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residue	18.1	.932	20.3	
Distillation loss	4.4			

Bureau of Mines Bartlesville Laboratory Item 104
Sample 71049

IDENTIFICATION

Kingfish field
La Troube, Eocene-Paleocene
7,500 feet

Australia
Offshore

GENERAL CHARACTERISTICS

Gravity, specific, 0.800 Gravity, ° API, 45.4 Pour point, ° F., 60
Sulfur, percent, 0.12 Color, brownish black
Viscosity, Saybolt Universal at 77° F., 32 sec., at 100° F., 31 sec. Nitrogen, percent, 0.006

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 750 mm. Hg
First drop, 120 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	3.9	3.9	0.637	90.6					
2	167	4.4	8.3	.670	79.7	7.5	1.37285	126.3		
3	212	6.7	15.0	.716	66.1	19	1.38325	129.2		
4	257	9.8	24.8	.743	58.9	23	1.41283	132.4		
5	302	7.6	32.4	.761	54.4	24	1.42515	134.6		
6	347	6.1	38.5	.778	50.4	25	1.43434	136.4		
7	392	3.7	42.2	.789	47.8	24	1.44048	140.0		
8	437	5.2	47.4	.801	45.2	24	1.44723	144.2		
9	482	6.7	54.1	.818	41.5	27	1.45811	145.1		
10	527	5.1	59.2	.833	38.4	30	1.46645	147.2		

Stage 2—Distillation continued at 40 mm. Hg

11	392	6.2	65.4	0.851	34.8	34	1.47278	159.3	39	35
12	437	6.2	71.6	.856	33.8	33	1.48200	160.8	44	60
13	482	6.2	77.8	.866	31.9	34			51	85
14	527	5.8	83.5	.876	30.0	36			62	115
15	572	5.4	89.0	.884	28.6	36			114	135
Residue		8.7	97.7	.923	21.8					

Carbon residue, Conradson: Residue, 2.0 percent; crude, 0.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	15.0	0.682	76.0	
Total gasoline and naphtha	42.2	0.734	61.4	
Kerosine distillate	11.9	.811	43.1	
Gas oil	19.7	.849	35.1	
Nonviscous lubricating distillate	11.0	.865-.882	32.2-29.0	50-100
Medium lubricating distillate	4.2	.882-.888	29.0-27.9	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residue	8.7	.923	21.8	
Distillation loss	2.3			

Bureau of Mines Bartlesville Laboratory Item 105
Sample 51083

IDENTIFICATION

Lakes Entrance field
Oligocene

Australia
Victoria

GENERAL CHARACTERISTICS

Gravity, specific, 0.959 Gravity, ° API, 16.0 Pour point, ° F., below 5
Sulfur, percent, 0.44 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 450 sec.; 130°F., 190 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 414 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test. ° F.
1	123									
2	167									
3	212									
4	257									
5	302									
6	347									
7	392									
8	437									
9	482	7.3	7.3	0.890	27.5	-	1.47657	122.6		
10	527	9.0	16.3	.904	25.0	63	1.48580	130.4		

Stage 2—Distillation continued at 40 mm. Hg

11	392	5.4	21.9	0.922	22.0	68		54	Below 5
12	437	12.2	34.1	.932	20.3	69		72	do.
13	482	12.7	46.8	.946	18.1	72		135	do.
14	527	9.3	56.1	.959	16.0	75		320	do.
15	572	11.7	67.8	.972	14.1	78		over 400	do.
Residuum		31.1	98.9	1.004	9.4				

Carbon residue, Conradson: Residuum, 12.1 percent; crude, 3.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha				
Kerosine distillate				
Gas oil	17.4	0.899	25.9	
Nonviscous lubricating distillate	16.2	.920-.938	22.3-19.4	50-100
Medium lubricating distillate	10.7	.938-.951	19.4-17.3	100-200
Viscous lubricating distillate	23.5	.951-.979	17.3-13.0	Above 200
Residuum	31.1	1.004	9.4	
Distillation loss	1.1			

Bureau of Mines Bartlesville Laboratory Item 106
Sample 65070

IDENTIFICATION

Moonie field
Precipice, Lower Jurassic
5,795 - 5,851 feet

Australia
Queensland

GENERAL CHARACTERISTICS

Gravity, specific, 0.807 Gravity, ° API, 43.8 Pour point, ° F., 25
Sulfur, percent, 0.02 Color, dark green
Viscosity, Saybolt Universal at 100°F., 37 sec. Nitrogen, percent, 0.003

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 742 mm. Hg
First drop, 89 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test. ° F.
1	122									
2	167	1.9	1.9	0.665	81.3	-	1.37526	126.4		
3	212	5.5	7.4	.709	68.1	16	1.39559	124.0		
4	257	10.4	17.8	.735	61.0	19	1.40787	125.0		
5	302	10.1	27.9	.750	57.2	19	1.41654	127.4		
6	347	7.2	35.1	.767	53.0	20	1.42633	128.7		
7	392	5.9	41.0	.788	48.1	24	1.43674	133.4		
8	437	3.3	46.3	.803	44.7	25	1.45510	136.9		
9	482	6.3	52.6	.818	41.5	27	1.45277	139.4		
10	527	7.3	59.9	.829	39.2	28	1.45949	144.4		

Stage 2—Distillation continued at 40 mm. Hg

11	392	5.4	65.3	0.840	37.0	29	1.46502	145.0	42	40
12	437	6.9	72.2	.843	36.4	27	1.46592	145.3	46	60
13	482	6.1	78.3	.848	35.4	26			54	75
14	527	5.6	83.9	.852	34.6	24			68	115
15	572	4.5	88.4	.861	32.8	26			-	130
Residuum		11.6	100.0	.902	25.4					

Carbon residue, Conradson: Residuum, 2.6 percent; crude, 0.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	7.4	0.698	71.3	
Total gasoline and naphtha	41.0	0.745	58.4	
Kerosine distillate	11.6	.811	42.9	
Gas oil	19.4	.837	37.6	
Nonviscous lubricating distillate	14.5	.846-.862	35.9-32.7	50-100
Medium lubricating distillate	1.9	.862-.865	32.7-32.1	100-200
Viscous lubricating distillate				Above 200
Residuum	11.6	.992	25.4	
Distillation loss	0.0			

Bureau of Mines Bartlesville Laboratory Item 107
Sample 65071

IDENTIFICATION

Moonie field Australia
Precipice, Lower Jurassic Queensland
5,641 - 5,675 feet

GENERAL CHARACTERISTICS

Gravity, specific, 0.781 Gravity, ° API, 49.7 Pour point, ° F., 5
Sulfur, percent, 0.02 Color, green
Viscosity, Saybolt Universal at 100°F., 34 sec. Nitrogen, percent, 0.003

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 744 mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc., 100° F.	Cloud test, ° F.
1	122	1.7	1.7	0.640	82.6		1.37487	126.2		
2	167	3.3	5.0	0.655	84.5	0.4	1.39363	125.3		
3	212	6.1	11.1	0.704	69.5	14	1.44057	124.0		
4	257	11.9	23.0	0.728	62.9	16	1.41411	126.9		
5	302	9.0	32.0	0.745	58.4	17	1.42189	127.6		
6	347	8.3	40.3	0.758	55.2	16	1.42962	131.2		
7	392	7.8	48.1	0.771	52.0	16	1.43694	131.6		
8	437	7.1	55.2	0.786	48.5	17	1.44396	133.9		
9	482	6.2	62.1	0.800	45.4	19	1.45132	138.6		
10	527	6.6	68.7	0.815	42.1	21				

Stage 2—Distillation continued at 40 mm. Hg

11	392	5.2	73.9	0.827	39.6	23	1.45841	142.8	39	40
12	437	4.8	78.7	0.830	39.0	20	1.46027	141.0	44	65
13	482	3.9	82.6	0.833	38.4	18			50	80
14	527	3.9	86.5	0.846	35.8	21			63	100
15	572	4.6	91.1	0.855	34.0	23			100	120
Residuum		6.4	97.5	0.910	24.0					

Carbon residue, Conradson: Residuum, 2.2 percent; crude, 0.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	11.1	0.680	76.7	
Total gasoline and naphtha	48.1	0.732	61.8	
Kerosene distillate	20.6	0.800	45.4	
Gas oil	12.0	0.822	37.2	
Nonviscous lubricating distillate	8.1	0.833-0.855	38.4-34.0	50-100
Medium lubricating distillate	2.3	0.855-0.860	34.0-33.1	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	6.4	0.910	24.0	
Distillation loss	2.5			

Bureau of Mines Bartlesville Laboratory Item 108
Sample 57025

IDENTIFICATION

Bacuranao-Cruz Verde field Caribbean
Cuban Serpentine, Cretaceous Cuba
1,200 - 2,500 feet Havana

GENERAL CHARACTERISTICS

Gravity, specific, 0.875 Gravity, ° API, 30.2 Pour point, ° F., below 5
Sulfur, percent, 0.88 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 65 sec.; 100°F., 54 sec. Nitrogen, percent, 0.151

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 739 mm. Hg
First drop, 86 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc., 100° F.	Cloud test, ° F.
1	122	1.8	1.8	0.666	81.0		1.39066	129.0		
2	167	3.7	5.5	0.712	67.2	27	1.41088	130.9		
3	212	3.1	8.6	0.738	60.2	30	1.42128	139.4		
4	257	7.0	15.6	0.757	55.4	30	1.43352	138.0		
5	302	5.6	21.2	0.778	50.4	32	1.44315	134.5		
6	347	5.3	26.5	0.796	46.3	34	1.45165	135.7		
7	392	4.4	30.9	0.814	42.3	36	1.46048	139.3		
8	437	4.6	35.5	0.833	38.4	40	1.47011	148.5		
9	482	4.6	40.1	0.849	35.2	42	1.47924	155.5		
10	527	6.6	46.7	0.865	32.1	45				

Stage 2—Distillation continued at 40 mm. Hg

11	392	2.6	49.3	0.877	29.9	46	1.48602	156.1	42	Below 5
12	437	6.2	55.5	0.892	26.6	51	1.49110	159.1	49	do.
13	482	3.3	58.8	0.901	25.6	51	1.49708	167.1	64	10
14	527	6.6	65.4	0.917	22.8	55	1.50365	173.8	105	35
15	572	5.3	70.7	0.930	20.7	58	1.50984	177.5	270	55
Residuum		28.1	98.8	0.999	10.1					

Carbon residue, Conradson: Residuum, 8.0 percent; crude, 2.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.6	0.712	67.2	
Total gasoline and naphtha	30.9	0.763	54.0	
Kerosene distillate	-	-	-	
Gas oil	21.9	0.860	33.0	
Nonviscous lubricating distillate	8.7	0.895-0.915	26.6-23.1	50-100
Medium lubricating distillate	4.1	0.915-0.924	23.1-21.6	100-200
Viscous lubricating distillate	5.1	0.924-0.935	21.6-19.8	Above 200
Residuum	28.1	0.999	10.1	
Distillation loss	1.2			

Bureau of Mines Bartlesville Laboratory Item 109
Sample 57026

IDENTIFICATION

Bacuranoo-Cruz Verde field
Cuban Serpentine, Cretaceous
1,200 - 2,500 feet

Caribbean
Cuba
Havana

GENERAL CHARACTERISTICS

Gravity, specific, 0.887 Gravity, ° API, 28.0 Pour point, ° F., below 5
Sulfur, percent, 0.20 Color, greenish black
Viscosity, Saybolt Universal at 77°F., 76 sec.; 100°F., 62 sec. Nitrogen, percent, 0.166

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 746 mm. Hg
First drop, 115 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum, percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test. ° F.
1	122									
2	167	1.7	1.7	0.887	74.5	-	1.38027	125.2		
3	212	4.6	6.3	.735	61.0	28	1.40243	127.3		
4	257	6.4	12.7	.761	54.4	32	1.42376	140.0		
5	302	5.3	18.0	.783	49.2	35	1.43631	145.7		
6	347	5.1	23.1	.801	45.2	36	1.44568	148.4		
7	392	3.9	27.0	.818	41.5	38	1.45291	147.4		
8	437	4.8	31.8	.836	37.8	41	1.46235	149.9		
9	482	5.2	37.0	.853	34.4	44	1.47200	152.4		
10	527	6.1	43.1	.868	31.5	46	1.48080	152.1		

Stage 2—Distillation continued at 40 mm. Hg

11	392	2.5	45.6	0.883	28.8	49	1.48786	161.7	43	Below 5
12	437	7.1	52.7	.892	27.1	50	1.49261	163.7	49	do.
13	482	5.2	57.9	.906	24.7	53	1.49927	170.8	71	do.
14	527	4.7	62.6	.918	22.6	56	1.50615	173.3	115	20
15	572	6.0	68.6	.937	19.5	62	1.51093	166.8	270	45
Residuum		31.0	99.6	.989	11.6					

Carbon residue, Conradson: Residuum, 8.9 percent; crude, 3.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	6.3	0.722	64.5	
Total gasoline and naphtha	27.0	0.772	51.8	
Kerosine distillate				
Gas oil	22.6	.863	32.5	
Nonviscous lubricating distillate	9.0	.893-.914	27.0-23.3	50-100
Medium lubricating distillate	4.7	.914-.928	23.3-21.0	100-200
Viscous lubricating distillate	5.3	.928-.947	21.0-17.9	Above 200
Residuum	31.0	.989	11.6	
Distillation loss	0.4			

Bureau of Mines Bartlesville Laboratory Item 110
Sample 59240

IDENTIFICATION

Dos Estrellas (Jatibonico) field
Upper Cretaceous
1,123 feet

Caribbean
Cuba
Camaguey

GENERAL CHARACTERISTICS

Gravity, specific, 0.965 Gravity, ° API, 15.1 Pour point, ° F., 30
Sulfur, percent, 1.79 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 1,150 sec.; 130°F., 420 sec. Nitrogen, percent, 0.114

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 387 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum, percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test. ° F.
1	122									
2	167									
3	212									
4	257									
5	302									
6	347									
7	392									
8	437	2.8	2.8	0.864	32.3	-	1.46454	122.7		
9	482	6.0	8.8	.877	29.9	55	1.47316	129.0		
10	527	9.1	17.9	.893	27.0	58	1.48314	135.0		

Stage 2—Distillation continued at 40 mm. Hg

11	392	5.9	23.8	0.913	23.5	64	1.49477	144.0	50	25
12	437	8.8	32.6	.932	20.3	69	1.50254	154.0	68	35
13	482	8.5	41.1	.942	18.7	70	1.51214	165.7	135	45
14	527	8.4	49.5	.961	15.7	73	1.52353	166.9	400	55
15	572	4.4	53.9	.970	14.4	77			over 400	80
Residuum		44.7	98.6	1.018	7.5					

Carbon residue, Conradson: Residuum, 7.4 percent; crude, 3.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha				
Kerosine distillate				
Gas oil	20.9	0.887	28.0	
Nonviscous lubricating distillate	13.1	.913-.939	23.5-19.2	50-100
Medium lubricating distillate	7.0	.939-.951	19.2-17.3	100-200
Viscous lubricating distillate	12.9	.951-.973	17.3-13.9	Above 200
Residuum	44.7	1.018	7.5	
Distillation loss	1.4			

1/ Distillation discontinued at 547°F.

Bureau of Mines Bartlesville Laboratory Item 111
Sample 55081

IDENTIFICATION

Dos Estrellas (Jatibonico) field
Jiquima, Upper Cretaceous
1,072 - 1,087 feet

Caribbean
Cuba
Camaguey

GENERAL CHARACTERISTICS

Gravity, specific, ... 0.968 Gravity, ° API, ... 14.7 Pour point, ° F, ... 15
Sulfur, percent, ... 1.83 Color, brownish green
Viscosity, Saybolt Universal at 100° F, 1,270 sec.; 130° F, 450 sec. Nitrogen, percent, ... 0.122

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, ... 739 mm. Hg
First drop, ... 367 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum, percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	257									
5	302									
6	347									
7	392	0.6	0.6	0.823	40.4	-	1.45154	124.5		
8	437	3.0	3.6	.863	32.5	54	1.46365	125.3		
9	482	5.7	9.3	.879	29.5	56	1.47387	127.8		
10	527	7.0	16.3	.892	27.1	58	1.48243	133.1		

Stage 2—Distillation continued at 40 mm. Hg

11	392	6.4	22.7	0.917	22.8	65	1.49285	139.4	49	Below 5
12	437	8.6	31.3	.929	20.8	67	1.50192	146.8	65	do.
13	482	8.4	39.7	.948	17.8	73	1.51097	166.2	120	do.
14	527	6.7	46.4	.966	15.0	78			310	35
15	572	6.9	53.3	.981	12.7	-			over 400	45
Residuum		45.3	98.6	1.020	7.2					

Carbon residue, Conradson: Residuum, 13.1 percent; crude, 6.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha	0.6	0.823	40.4	
Kerosine distillate				
Gas oil	19.5	.888	27.9	
Nonviscous lubricating distillate	12.3	.918-.941	22.6-18.9	50-100
Medium lubricating distillate	6.3	.941-.955	18.9-16.7	100-200
Viscous lubricating distillate	14.6	.955-.989	16.7-11.6	Above 200
Residuum	45.3	1.020	7.2	
Distillation loss	1.4			

1/ Distillation discontinued at 552° F.

Bureau of Mines Bartlesville Laboratory Item 112
Sample 55082

IDENTIFICATION

Dos Estrellas (Jatibonico) field
Jiquima, Upper Cretaceous
1,286 - 1,301 feet

Caribbean
Cuba
Camaguey

GENERAL CHARACTERISTICS

Gravity, specific, ... 0.971 Gravity, ° API, ... 14.2 Pour point, ° F, ... 15
Sulfur, percent, ... 1.97 Color, brownish green
Viscosity, Saybolt Universal at 100° F, 1,850 sec.; 130° F, 620 sec. Nitrogen, percent, ... 0.131

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, ... 739 mm. Hg
First drop, ... 387 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum, percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	257									
5	302									
6	347									
7	392									
8	437	2.0	2.0	0.847	35.6	-	1.45002	129.9		
9	482	6.2	8.2	.880	29.3	57	1.47063	129.8		
10	527	8.8	17.0	.896	26.4	59	1.48373	134.1		

Stage 2—Distillation continued at 40 mm. Hg

11	392	5.3	22.3	0.911	23.8	63	1.49559	143.1	52	Below 5
12	437	8.1	30.4	.931	20.5	68	1.50331	147.5	70	do.
13	482	8.3	38.7	.947	17.9	73	1.51366	158.3	135	do.
14	527	7.5	46.2	.963	15.4	77			360	25
15	572	3.9	50.1	.972	14.1	-			over 400	50
Residuum		48.8	98.9	1.022	7.0					

Carbon residue, Conradson: Residuum, 12.3 percent; crude, 6.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha				
Kerosine distillate				
Gas oil	19.0	0.887	28.0	
Nonviscous lubricating distillate	11.2	.909-.938	24.2-19.4	50-100
Medium lubricating distillate	6.8	.938-.952	19.4-17.1	100-200
Viscous lubricating distillate	13.1	.952-.975	17.1-13.6	Above 200
Residuum	48.8	1.022	7.0	
Distillation loss	1.1			

1/ Distillation discontinued at 545° F.

Bureau of Mines Bartlesville Laboratory Item 113
Sample 57022

IDENTIFICATION

Santa Maria del Mar field
Cuban Serpentine, Cretaceous
2,000 - 6,000 feet

Caribbean
Cuba
Havana

GENERAL CHARACTERISTICS

Gravity, specific, 0.923 Gravity, ° API, 21.8 Pour point, ° F., below 5
Sulfur, percent, 2.48 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 230 sec.; 130°F., 130 sec. Nitrogen, percent, 0.176

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 106 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum, percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	1.8	1.8	0.689	73.9	-	1.37352	123.2		
4	257	1.7	3.5	.745	58.4	24	1.39147	124.6		
5	302	2.2	5.7	.770	52.3	28	1.41347	130.4		
6	347	2.9	8.6	.790	47.6	31	1.43980	142.2		
7	392	3.0	11.6	.806	44.1	32	1.44764	144.1		
8	437	4.0	15.6	.822	40.6	34	1.45598	145.4		
9	482	4.8	20.4	.839	37.2	37	1.46560	145.3		
10	527	6.0	26.4	.862	32.7	43	1.47667	158.4		

Stage 2—Distillation continued at 40 mm. Hg

11	392	3.3	29.7	0.877	29.9	46	1.48726	165.4	41	Below 5
12	437	6.3	36.0	.892	27.1	50	1.49303	167.6	48	10
13	482	6.5	42.5	.907	24.5	54	1.50205	176.3	63	30
14	527	5.8	48.3	.923	21.8	58	1.51017	188.9	100	50
15	572	7.0	55.3	.935	19.8	61			220	75
Residuum		44.5	99.8	.994	10.9					

Carbon residue, Conrads: Residuum, 7.9 percent; crude, 3.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	1.8	0.659	73.9	
Total gasoline and naphtha	11.6	0.768	52.7	
Kerosine distillate	4.0	.822	40.6	
Gas oil	16.2	.864	32.3	
Nonviscous lubricating distillate	11.6	.893-.923	27.0-21.8	50-100
Medium lubricating distillate	5.4	.923-.933	21.8-20.2	100-200
Viscous lubricating distillate	4.5	.933-.941	20.2-18.9	Above 200
Residuum	44.5	.994	10.9	
Distillation loss	0.2			

Bureau of Mines Bartlesville Laboratory Item 114
Sample 57023

IDENTIFICATION

Santa Maria del Mar field
Cuban Serpentine, Cretaceous
2,000 - 6,000 feet

Caribbean
Cuba
Havana

GENERAL CHARACTERISTICS

Gravity, specific, 0.966 Gravity, ° API, 15.0 Pour point, ° F., 15
Sulfur, percent, 3.26 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 1,440 sec.; 130°F., 610 sec. Nitrogen, percent, 0.230

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 739 mm. Hg
First drop, 109 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum, percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	1.2	1.2	0.743	58.9	-	1.40537	121.1		
4	257	1.5	2.7	.750	57.2	27	1.42337	126.9		
5	302	1.8	4.5	.772	51.8	29	1.43304	128.5		
6	347	2.1	6.6	.798	45.8	35	1.44316	132.4		
7	392	2.7	9.3	.825	40.0	41	1.45329	137.4		
8	437	3.1	12.4	.850	35.0	48	1.46624	147.6		
9	482	4.9	16.7	.873	30.6	53	1.48003	156.3		
10	527									

Stage 2—Distillation continued at 40 mm. Hg

11	392	7.2	23.9	0.906	24.7	60	1.50028	172.9	41	Below 5
12	437	6.0	29.9	.922	20.8	67	1.51207	185.6	54	do.
13	482	5.8	35.7	.948	17.8	73	1.52223	196.5	90	do.
14	527	5.3	41.0	.968	14.7	79	1.53065	197.3	230	do.
15	572									
Residuum		58.2	99.2	1.021	7.1					

Carbon residue, Conrads: Residuum, 6.6 percent; crude, 4.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	1.2	0.743	58.9	
Total gasoline and naphtha	9.3	0.766	48.5	
Kerosine distillate	-	-	-	
Gas oil	15.7	.884	28.6	
Nonviscous lubricating distillate	8.3	.912-.950	23.7-17.5	50-100
Medium lubricating distillate	4.0	.950-.961	17.5-15.7	100-200
Viscous lubricating distillate	3.7	.961-.977	15.7-13.3	Above 200
Residuum	58.2	1.021	7.1	
Distillation loss	0.8			

1/ Distillation discontinued at 482°F.

2/ Distillation discontinued at 527°F.

Bureau of Mines Bartlesville Laboratory Item 115
Sample 57029

IDENTIFICATION

Santa Maria del Mar field
Cuban Serpentine, Cretaceous
2,000 - 6,000 feet

Caribbean
Cuba
Havana

GENERAL CHARACTERISTICS

Gravity, specific, 0.904 Gravity, ° API, 25.0 Pour point, ° F., 15
Sulfur, percent, 2.25 Color, greenish black
Viscosity, Saybolt Universal at 100°F., 115 sec.; 130°F., 77 sec. Nitrogen, percent, 0.166

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Branch 1—Distillation at atmospheric pressure. 751 mm. Hg
First drop, 158 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	2.6	2.6	0.704	69.5	-	1.39496	125.6		
4	257	3.6	6.2	.747	57.9	25	1.41715	134.3		
5	302	3.5	9.7	.770	52.3	28	1.42956	143.5		
6	347	4.4	14.1	.786	48.5	29	1.43911	144.2		
7	392	4.3	18.4	.800	45.4	30	1.44582	150.8		
8	437	4.2	22.6	.812	42.8	30	1.45236	147.0		
9	482	5.4	28.0	.830	39.0	33	1.46110	145.6		
10	527	6.1	34.1	.847	35.6	36	1.47139	154.6		

Branch 2—Distillation continued at 40 mm. Hg

11	392	4.4	38.5	0.865	32.1	41	1.48131	154.8	42	10
12	437	5.5	44.0	.872	29.5	44	1.48711	163.9	48	25
13	482	5.6	49.6	.877	26.3	49	1.49588	159.5	65	40
14	527	5.6	55.2	.912	23.7	53	1.50417	167.0	105	55
15	572	5.4	60.6	.925	21.5	56			220	70
Residuum		38.1	98.7	1.004	9.4					

Carbon residue, Conradson: Residuum, 6.8 percent; crude, 2.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	2.6	0.704	69.5	
Total gasoline and naphtha	18.4	0.767	53.0	
Kerosine distillate	4.2	.812	42.8	
Gas oil	19.3	.852	34.6	
Nonviscous lubricating distillate	9.9	.881-.910	29.1-24.0	50-100
Medium lubricating distillate	5.2	.910-.921	24.0-22.1	100-200
Viscous lubricating distillate	3.6	.921-.931	22.1-20.5	Above 200
Residuum	38.1	1.004	9.4	
Distillation loss	1.3			

Bureau of Mines Bartlesville Laboratory Item 116
Sample 53062

IDENTIFICATION

Lacq (Superior) field
Upper Cretaceous

Europe
France
Basses Pyrennes

GENERAL CHARACTERISTICS

Gravity, specific, 0.923 Gravity, ° API, 21.8 Pour point, ° F., below 5
Sulfur, percent, 4.34 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 430 sec.; 130°F., 250 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Branch 1—Distillation at atmospheric pressure. 745 mm. Hg
First drop, 84 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1	122	2.7	2.7	0.625	94.9					
2	167	1.7	4.6	.657	83.2	1.3	1.37510	122.2		
3	212	2.6	7.2	.697	71.5	10	1.39010	123.2		
4	257	2.1	9.3	.717	65.9	11	1.40002	123.1		
5	302	1.9	11.2	.735	61.0	12	1.41082	124.1		
6	347	2.3	13.5	.753	56.4	14	1.42054	126.6		
7	392	2.5	16.0	.772	51.8	16	1.42950	125.6		
8	437	3.2	19.2	.793	46.9	21	1.44012	132.0		
9	482	3.9	23.1	.807	43.8	22	1.45079	138.9		
10	527	5.9	29.0	.829	39.2	28	1.46192	147.5		

Branch 2—Distillation continued at 40 mm. Hg

11	392	2.3	31.3	0.853	34.4	35	1.46896	148.4	39	10
12	437	4.4	35.7	.863	32.5	36	1.47732	150.3	45	25
13	482	4.7	40.4	.880	29.3	41			55	50
14	527	5.6	46.0	.901	25.6	48			78	65
15	572	5.6	51.6	.922	22.0	55			155	80
Residuum		47.1	98.7	1.046	3.8					

Carbon residue, Conradson: Residuum, 18.1 percent; crude, 9.7 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	7.2	0.659	83.2	
Total gasoline and naphtha	16.0	0.707	68.6	
Kerosine distillate	7.1	.801	45.2	
Gas oil	12.8	.846	35.8	
Nonviscous lubricating distillate	8.9	.872-.907	30.8-24.5	50-100
Medium lubricating distillate	6.8	.907-.932	24.5-20.3	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	47.1	1.046	3.8	
Distillation loss	1.3			

Bureau of Mines Bartlesville Laboratory Item 117
Sample 52007

Dakota (Lingen) field
Lower Cretaceous

IDENTIFICATION

Europe
Germany
Emsland

GENERAL CHARACTERISTICS

Gravity, specific, 0.878 Gravity, ° API, 29.7 Pour point, ° F., 70
Sulfur, percent, 0.79 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 210 sec.; 130°F., 110 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 757 mm. Hg
First drop, 138 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test. ° F.
1	122									
2	167									
3	212									
4	257	2.2	2.2	0.707	68.6	-	1.40324	130.6		
5	302	6.1	8.3	.739	60.0	14	1.41602	137.0		
6	347	3.5	11.8	.765	53.5	19	1.42702	139.6		
7	392	3.4	15.2	.779	50.1	20	1.43452	139.4		
8	437	3.7	18.9	.793	46.9	21	1.44203	140.7		
9	482	4.1	23.0	.806	44.1	22	1.45015	145.3		
10	527	7.4	30.4	.819	41.3	23	1.45828	149.4		

Stage 2—Distillation continued at 40 mm. Hg

11	392	1.9	32.3	0.840	37.0	29	1.46648	156.2	40	35
12	437	3.7	36.0	.843	36.4	27	1.47578	160.5	44	45
13	482	4.8	40.8	.852	34.6	28			52	65
14	527	4.8	45.6	.861	32.8	29			66	80
15	572	6.0	51.6	.873	30.6	31			97	95
Residuum		47.7	99.3	.948	17.6					

Carbon residue, Conradson: Residuum, 7.3 percent; crude, 3.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	2.2	0.707	68.6	
Total gasoline and naphtha	15.2	0.749	57.4	
Kerosine distillate	15.2	.809	43.4	
Gas oil	7.1	.845	36.0	
Nonviscous lubricating distillate	11.7	.850-.874	35.0-30.4	50-100
Medium lubricating distillate	2.4	.874-.879	30.4-29.5	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	47.7	.948	17.6	
Distillation loss	0.7			

Bureau of Mines Bartlesville Laboratory Item 118
Sample 52008

Georgsdorf field
Lower Cretaceous

IDENTIFICATION

Europe
Germany
Emsland

GENERAL CHARACTERISTICS

Gravity, specific, 0.908 Gravity, ° API, 24.3 Pour point, ° F., 35
Sulfur, percent, 0.94 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 2340 sec.; 130°F., 1000 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 746 mm. Hg
First drop, 93 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test. ° F.
1	122									
2	167									
3	212	3.0	3.0	0.682	76.0	-	1.39651	128.2		
4	257	1.9	4.9	.719	65.3	12	1.40848	130.6		
5	302	2.2	7.1	.747	57.9	18	1.41750	132.6		
6	347	2.2	9.3	.766	53.2	20	1.42648	135.7		
7	392	2.5	11.8	.784	49.0	22	1.43588	138.3		
8	437	2.8	14.6	.806	44.1	27	1.44757	142.5		
9	482	2.8	17.4	.823	40.4	30	1.46128	155.2		
10	527	2.8	20.2	.841	36.8	33	1.46730	157.9		

Stage 2—Distillation continued at 40 mm. Hg

11	392	2.4	22.6	0.861	32.8	39	1.47528	159.3	38	Below 5
12	437	3.4	26.0	.876	30.0	42	1.48348	160.8	46	do.
13	482	2.7	28.7	.887	28.0	44			58	20
14	527	3.2	31.9	.899	25.9	47			89	35
15	572	4.2	36.1	.905	24.9	-			130	45
Residuum		62.7	98.8	.958	16.2					

Carbon residue, Conradson: Residuum, 11.5 percent; crude, 7.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	3.0	0.682	76.0	
Total gasoline and naphtha	11.8	0.737	60.5	
Kerosine distillate	2.8	.806	44.1	
Gas oil	10.9	.850	35.0	
Nonviscous lubricating distillate	5.9	.880-.901	29.2-25.6	50-100
Medium lubricating distillate	4.7	.901-.909	25.6-24.2	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	62.7	.958	16.2	
Distillation loss	1.2			

1/ Distillation discontinued at 558°F.

Bureau of Mines Bartlesville Laboratory Item 119
Sample 52006

IDENTIFICATION

Nienhagen-Hanigsen field
Lower Cretaceous

Europe
Germany
Hanover

GENERAL CHARACTERISTICS

Gravity, specific, 0.880 Gravity, ° API, 22.3 Pour point, ° F., 35
Sulfur, percent, 0.87 Color, greenish black
Viscosity, Saybolt Universal at 100°F, 92 sec.; 130°F, 39 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 757 mm. Hg
First drop, 91 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122	0.9	0.9							
2	167	1.5	2.4	0.660	82.9	-	1.38320	126.1		
3	212	2.1	4.5	.689	70.9	11	1.39525	127.2		
4	257	3.2	7.7	.727	63.1	16	1.40565	128.8		
5	302	3.0	10.7	.750	57.2	19	1.41751	131.1		
6	347	3.6	14.3	.770	52.3	22	1.42805	135.1		
7	392	3.5	17.8	.787	48.3	23	1.43771	137.9		
8	437	4.1	21.9	.803	44.7	25	1.44666	141.2		
9	482	4.5	26.4	.818	41.5	27	1.45528	145.1		
10	527	6.7	33.1	.833	38.4	30	1.46416	151.9		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
11	392	4.3	37.4	0.850	35.0	34	1.47305	154.5	40	10
12	437	5.8	43.2	.858	33.4	34	1.48215	156.6	45	30
13	482	6.6	49.8	.874	30.4	38			57	45
14	527	5.1	54.9	.889	27.7	42			83	65
15	572	7.2	62.1	.902	25.4	45			150	80
Residuum		37.8	99.9	.969	14.5					

Carbon residue, Conradson: Residuum, 9.8 percent; crude, 4.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	4.5	0.678	77.2	
Total gasoline and naphtha	17.8	0.739	60.0	
Kerosene distillate	8.6	.811	43.0	
Gas oil	16.7	.847	35.6	
Nonviscous lubricating distillate	10.8	.865-.892	32.1-27.1	50-100
Medium lubricating distillate	8.2	.892-.909	27.1-24.2	100-200
Viscous lubricating distillate				Above 200
Residuum	37.8	.969	14.5	
Distillation loss	0.1			

Bureau of Mines Bartlesville Laboratory Item 120
Sample 52005

IDENTIFICATION

Suderbruch field
Jurassic

Europe
Germany
Hanover

GENERAL CHARACTERISTICS

Gravity, specific, 0.868 Gravity, ° API, 31.5 Pour point, ° F., 45
Sulfur, percent, 0.71 Color, greenish black
Viscosity, Saybolt Universal at 100°F, 71 sec.; 130°F, 52 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 757 mm. Hg
First drop, 81 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122	1.6	1.6							
2	167	1.8	3.4	0.650	86.2	-	1.37222	121.1		
3	212	2.3	5.7	.689	73.9	6.6	1.38828	120.0		
4	257	3.2	8.9	.721	64.8	13	1.40242	128.5		
5	302	3.3	12.2	.743	58.9	16	1.41538	132.6		
6	347	3.8	16.0	.765	53.5	19	1.42631	135.7		
7	392	3.9	19.9	.782	49.5	21	1.43650	138.9		
8	437	3.7	23.6	.800	45.4	24	1.44523	141.1		
9	482	4.4	28.0	.814	42.3	25	1.45319	143.8		
10	527	6.6	34.6	.826	39.8	26	1.46187	151.2		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
11	392	4.3	38.9	0.846	35.8	32	1.46985	154.4	39	15
12	437	5.8	44.7	.854	34.2	32	1.47764	157.5	44	30
13	482	6.3	51.0	.868	31.5	39			56	50
14	527	6.0	57.0	.884	28.6	40			81	65
15	572	7.7	64.7	.898	26.1	43			160	80
Residuum		34.4	99.1	.969	14.5					

Carbon residue, Conradson: Residuum, 9.9 percent; crude, 3.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	5.7	0.666	81.0	
Total gasoline and naphtha	19.9	0.729	62.6	
Kerosene distillate	8.1	.808	43.6	
Gas oil	17.1	.842	36.6	
Nonviscous lubricating distillate	10.4	.861-.887	32.8-28.0	50-100
Medium lubricating distillate	9.0	.887-.905	28.0-24.2	100-200
Viscous lubricating distillate	0.2	.905-.906	24.2-23.7	Above 200
Residuum	34.4	.969	14.5	
Distillation loss	.9			

Bureau of Mines Bartlesville Laboratory Item 121
Sample 58037

IDENTIFICATION

Ijsselmonde field
Barremian, Lower Cretaceous
3, 100 feet

Europe
Netherlands

GENERAL CHARACTERISTICS

Gravity, specific, 0.939 Gravity, ° API, 19.2 Pour point, ° F., below 5
Sulfur, percent, 0.53 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 780 sec.; 130°F., 340 sec. Nitrogen, percent, 0.180

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 183 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	257									
5	302	0.7	0.7	0.756	55.7	-	1.42230	127.4		
6	347	9	1.6	.797	46.0	34	1.43570	128.5		
7	392	1.3	2.9	.816	41.9	37	1.44878	132.1		
8	437	2.6	5.5	.843	36.4	44	1.46064	137.8		
9	482	4.3	9.8	.861	32.8	48	1.47252	141.9		
10	527	5.4	15.2	.877	29.9	50	1.48368	161.1		

Stage 2—Distillation continued at 40 mm. Hg

11	392	4.1	19.3	0.890	27.5	53	1.49323	164.6	44	Below 5
12	437	4.7	24.0	.901	25.6	54	1.49712	178.1	53	do.
13	482	7.0	31.0	.913	23.5	56	1.50293	179.2	73	do.
14	527	6.6	37.6	.919	22.5	56	1.50867	173.8	125	do.
15	572	2.2	39.8	.925	21.5	56			190	do.
Residue		59.4	99.2	.974	13.8					

Carbon residue, Conradson: Residue, 4.6 percent; crude, 2.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha	2.9	0.796	46.3	
Kerosene distillate				
Gas oil	17.3	.872	30.8	
Nonviscous lubricating distillate	10.8	.897-.916	26.3-23.0	50-100
Medium lubricating distillate	8.4	.916-.926	23.0-21.3	100-200
Viscous lubricating distillate	0.4	.926-.927	21.3-21.1	Above 200
Residue	59.4	.974	13.8	
Distillation loss	.8			

1/ Distillation discontinued at 536°F.

Bureau of Mines Bartlesville Laboratory Item 122
Sample 58036

IDENTIFICATION

Schoonebeek field
Valanginian, Lower Cretaceous
2, 500 feet

Europe
Netherlands

GENERAL CHARACTERISTICS

Gravity, specific, 0.910 Gravity, ° API, 24.0 Pour point, ° F., 60
Sulfur, percent, 0.96 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 1,200 sec.; 130°F., 580 sec. Nitrogen, percent, 0.201

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 183 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	1.7	1.7	0.733	61.5	-	1.39520	126.2		
4	257	0.9	2.6	.747	57.9	25	1.41024	128.1		
5	302	1.7	4.3	.757	55.4	22	1.42217	132.4		
6	347	1.7	6.0	.773	51.6	23	1.43042	136.7		
7	392	2.0	8.0	.795	46.5	27	1.43852	140.3		
8	437	2.5	10.5	.808	43.6	28	1.44670	143.3		
9	482	3.2	14.4	.821	40.9	29	1.45612	147.0		
10	527	4.5	18.9	.833	38.4	30	1.46238	147.9		

Stage 2—Distillation continued at 40 mm. Hg

11	392	1.8	20.7	0.851	34.8	34	1.47384	149.6	40	24
12	437	3.3	24.0	.860	33.0	35	1.47770	151.4	46	40
13	482	3.7	27.7	.870	31.1	36	1.48272	153.5	56	54
14	527	4.3	32.0	.883	28.8	39			76	76
15	572	1.7	33.7	.891	27.3	40			105	90
Residue		65.9	99.6	.948	17.8					

Carbon residue, Conradson: Residue, 4.4 percent; crude, 3.0 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha	8.0	0.764	53.7	
Kerosene distillate	6.4	.816	41.9	
Gas oil	9.8	.845	36.0	
Nonviscous lubricating distillate	8.2	.864-.889	32.3-27.7	50-100
Medium lubricating distillate	1.3	.889-.893	27.7-27.0	100-200
Viscous lubricating distillate				Above 200
Residue	65.9	.948	17.8	
Distillation loss	0.4			

Bureau of Mines Bartlesville Laboratory Item 123
Sample 52048

IDENTIFICATION

Londava field
Pliocene-Miocene
5,300 feet

Europe
Yugoslavia

GENERAL CHARACTERISTICS

Gravity, specific, 0.847 Gravity, ° API, 35.6 Pour point, ° F., 55
Sulfur, percent, 0.14 Color, green
Viscosity, Saybolt Universal at 100°F, 38 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 176 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	0.8	0.8	0.730	62.3	-	1.42000	140.1		
4	257	2.7	3.5	.760	54.7	31	1.42947	148.7		
5	302	6.9	10.4	.784	49.0	35	1.43751	155.3		
6	347	7.9	18.3	.797	46.0	34	1.44464	153.7		
7	392	7.7	26.0	.810	43.2	34	1.45098	151.0		
8	437	8.4	34.4	.826	39.8	36	1.46036	155.8		
9	482	11.3	45.7	.842	36.6	39	1.47072	167.2		
10	527	12.2	57.9	.854	34.2	40	1.47739	172.6		

Stage 2—Distillation continued at 40 mm. Hg

11	392	5.6	63.5	0.865	32.1	41	1.48546	174.4	40	25
12	437	9.0	72.5	.867	31.7	38	1.49349	175.8	45	45
13	482	7.9	80.4	.874	30.4	38			56	65
14	527	5.9	86.3	.885	28.4	40			81	80
15	572	4.6	90.9	.893	27.0	41			140	95
Residuum		8.2	99.1	.939	19.2					

Carbon residue, Conradson: Residuum, 3.4 percent; crude, 0.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	0.8	0.730	62.3	
Total gasoline and naphtha	26.0	0.792	47.2	
Kerosine distillate				
Gas oil	46.2	.850	35.0	
Nonviscous lubricating distillate	12.2	.870-.886	31.1-28.2	50-100
Medium lubricating distillate	6.5	.886-.896	28.2-26.4	100-200
Viscous lubricating distillate				Above 200
Residuum	8.2	.939	19.2	
Distillation loss	0.9			

Bureau of Mines Bartlesville Laboratory Item 124
Sample 52012

IDENTIFICATION

Coleville field
Lower Cretaceous
2,680 - 2,740 feet

North America
Canada
Saskatchewan

GENERAL CHARACTERISTICS

Gravity, specific, 0.872 Gravity, ° API, 14.1 Pour point, ° F., 20
Sulfur, percent, 3.38 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 3450 sec.; 130°F, 1100 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 747 mm. Hg
First drop, 140 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	257									
5	302	0.5	0.5	0.761	54.4	-	1.42080	129.6		
6	347	3.7	4.2	.770	52.2	22	1.43660	138.4		
7	392	2.1	6.3	.818	41.5	38	1.45084	150.5		
8	437	3.1	9.4	.842	36.6	44	1.46453	150.6		
9	482	3.6	13.0	.864	32.3	49	1.47726	154.9		
10	527	3.8	16.8	.878	29.7	51	1.48592	161.0		

Stage 2—Distillation continued at 40 mm. Hg

11	392	8.5	25.3	0.910	24.0	62	1.49304	163.9	46	Below 5
12	437	3.6	28.9	.928	21.0	62	1.50105	166.3	70	do.
13	482	4.3	33.2	.937	19.5	68			110	do.
14	527	4.3	37.5	.949	17.6	70			200	do.
15	572	6.0	43.5	.955	16.7	70			400	do.
Residuum		56.1	99.6	1.032	5.6					

Carbon residue, Conradson: Residuum, 18.5 percent; crude, 11.0 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	0.5	0.761	54.4	
Total gasoline and naphtha	6.3	0.785	48.8	
Kerosine distillate				
Gas oil	15.8	.877	29.9	
Nonviscous lubricating distillate	8.0	.913-.935	23.5-19.8	50-100
Medium lubricating distillate	5.3	.935-.949	19.8-17.6	100-200
Viscous lubricating distillate	8.1	.949-.959	17.6-16.0	Above 200
Residuum	56.1	1.032	5.6	
Distillation loss	0.4			

Bureau of Mines Bartlesville Laboratory Item 125
Sample 51067

IDENTIFICATION

Excelsior field
D-2, Upper Devonian

North America
Canada
Alberta

GENERAL CHARACTERISTICS

Gravity, specific, 0.845 Gravity, ° API, 36.0 Pour point, ° F., below 5
Sulfur, percent, 0.64 Color, greenish black
Viscosity, Saybolt Universal at 100°F., 43 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 747 mm. Hg
First drop, 88 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	2.6	2.6	0.637	90.6					
2	167	2.3	4.9	0.667	80.6	6.1	1.37616	127.5		
3	212	4.7	9.6	0.712	67.2	18	1.39546	123.2		
4	257	6.1	15.7	0.739	60.0	21	1.40853	126.4		
5	302	6.3	22.0	0.757	55.4	22	1.42030	139.0		
6	347	4.9	26.9	0.780	49.9	26	1.43229	135.8		
7	392	4.4	31.3	0.799	45.6	29	1.44214	138.2		
8	437	4.9	36.2	0.813	42.6	30	1.44991	140.8		
9	482	4.9	41.1	0.825	40.0	31	1.45682	144.3		
10	527	6.3	47.4	0.838	37.4	32	1.46492	151.2		

Stage 2—Distillation continued at 40 mm. Hg

11	392	3.8	51.2	0.851	34.8	34	1.47272	156.8	42	15
12	437	6.6	57.8	0.860	33.0	35	1.48168	159.1	48	35
13	482	4.6	62.4	0.876	30.0	39			64	45
14	527	4.8	67.2	0.884	28.6	40			88	70
15	572	6.8	74.0	0.896	26.4	42			190	85
Residuum		29.4	98.4	0.964	15.3					

Carbon residue, Conradson: Residuum, 9.8 percent; crude, 2.7 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.6	0.681	76.3	
Total gasoline and naphtha	31.3	0.740	59.7	
Kerosine distillate	9.8	0.819	41.3	
Gas oil	14.2	0.847	35.6	
Nonviscous lubricating distillate	10.2	0.862-885	32.7-28.4	50-100
Medium lubricating distillate	5.7	0.885-897	28.4-26.3	100-200
Viscous lubricating distillate	2.8	0.897-903	26.3-25.2	Above 200
Residuum	24.4	0.964	15.3	
Distillation loss	1.6			

Bureau of Mines Bartlesville Laboratory Item 126
Sample 51029

IDENTIFICATION

Fenn-Big Valley field
D-2, Devonian
2,514 - 2,547 feet

North America
Canada
Alberta

GENERAL CHARACTERISTICS

Gravity, specific, 0.858 Gravity, ° API, 33.4 Pour point, ° F., 20
Sulfur, percent, 1.09 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 65 sec.; 100°F., 52 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 749 mm. Hg
First drop, 81 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	3.2	3.2							
2	167	2.1	5.3	0.647	87.2	-	1.38804	126.1		
3	212	4.4	9.7	0.723	64.5	23	1.40143	130.0		
4	257	4.9	14.6	0.749	57.4	26	1.41529	134.2		
5	302	4.3	18.9	0.768	52.7	27	1.42547	136.6		
6	347	3.9	22.8	0.788	49.1	30	1.43449	138.5		
7	392	3.5	26.3	0.803	44.7	31	1.44423	141.2		
8	437	4.0	30.3	0.818	41.5	33	1.45297	145.2		
9	482	4.1	34.4	0.830	39.0	33	1.45980	148.3		
10	527	6.1	40.5	0.844	36.2	35	1.46784	155.2		

Stage 2—Distillation continued at 40 mm. Hg

11	392	2.4	42.9	0.851	34.8	34	1.47564	157.0	40	10
12	437	5.6	48.5	0.862	32.7	36	1.48460	159.8	46	30
13	482	5.4	53.9	0.877	29.9	39			58	50
14	527	4.7	58.6	0.889	27.7	42			88	70
15	572	7.3	65.9	0.904	25.0	46			180	85
Residuum		30.5	96.4	0.980	12.9					

Carbon residue, Conradson: Residuum, 11.2 percent; crude, 3.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.7	0.681	76.3	
Total gasoline and naphtha	26.3	0.740	59.7	
Kerosine distillate	4.0	0.818	41.5	
Gas oil	15.9	0.846	35.8	
Nonviscous lubricating distillate	9.5	0.867-891	31.7-27.3	50-100
Medium lubricating distillate	8.1	0.891-908	27.3-24.3	100-200
Viscous lubricating distillate	2.1	0.908-918	24.3-22.6	Above 200
Residuum	30.5	0.980	12.9	
Distillation loss	3.6			

Bureau of Mines Bartlesville Laboratory
Sample 52037

Item 127

IDENTIFICATION

Fenn-Big Valley field
D-2, Devonian
5,235 - 5,435 feet

North America
Canada
Alberta

GENERAL CHARACTERISTICS

Gravity, specific, 0.874 Gravity, ° API, 30.4 Pour point, ° F, 45
Sulfur, percent, 1.05 Color, greenish black
Viscosity, Saybolt Universal at 77°F, 91 sec. 100°F, 64 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 746 mm. Hg
First drop, 91 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122	1.3	1.3							
2	167	2.0	3.3	0.668	80.3	-	1.38506	127.1		
3	212	4.5	7.8	.723	64.2	23	1.40158	131.4		
4	257	4.9	12.7	.749	57.4	26	1.41538	135.0		
5	302	4.5	17.2	.769	52.5	28	1.42553	136.9		
6	347	4.5	21.7	.783	49.2	28	1.43504	139.4		
7	392	3.8	25.5	.802	44.9	31	1.44473	141.7		
8	437	4.4	29.9	.817	41.7	32	1.45354	145.5		
9	482	5.0	34.9	.828	39.4	32	1.46090	150.2		
10	527	7.3	42.2	.841	36.8	33	1.46802	156.9		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
11	392	1.8	44.0	0.853	34.4	35	1.47569	159.5	38	15
12	437	5.9	49.0	.860	33.0	35	1.48348	160.2	44	30
13	482	5.5	55.4	.872	30.8	37			57	50
14	527	5.1	60.5	.889	27.7	42			84	70
15	572	6.4	66.9	.903	25.2	46			150	85
Residuum		32.9	99.8	.981	12.7					

Carbon residuo, Conradson: Residuum, 11.0 percent; crude, 4.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	7.8	0.700	70.6	
Total gasoline and naphtha	25.5	0.763	54.0	
Kerosine distillate	4.4	.817	41.7	
Gas oil	19.8	.845	36.0	
Nonviscous lubricating distillate	9.7	.866-.892	31.9-27.1	50-100
Medium lubricating distillate	7.5	.892-.911	27.1-23.8	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	32.9	.981	12.7	
Distillation loss	0.2			

Bureau of Mines Bartlesville Laboratory
Sample 51030

Item 128

IDENTIFICATION

Fenn-Big Valley field
D-2, Devonian
2,581 - 2,694 feet

North America
Canada
Alberta

GENERAL CHARACTERISTICS

Gravity, specific, 0.854 Gravity, ° API, 34.2 Pour point, ° F, 35
Sulfur, percent, 0.71 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 49 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 749 mm. Hg
First drop, 82 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122	2.7	2.7	0.663	81.9					
2	167	6.0	8.7	.692	73.6	18	1.38587	135.2		
3	212	4.7	13.4	.742	59.2	32	1.40992	131.4		
4	257	2.5	15.9	.758	55.2	30	1.41812	130.6		
5	302	3.3	19.2	.771	52.0	29	1.42496	133.6		
6	347	4.2	23.4	.786	48.5	29	1.43317	136.2		
7	392	3.7	27.1	.802	44.9	31	1.44264	139.7		
8	437	3.9	31.0	.818	41.5	33	1.45188	142.9		
9	482	4.3	35.3	.829	39.2	32	1.45806	145.6		
10	527	5.9	41.2	.841	36.8	33	1.46548	151.1		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
11	392	2.9	44.1	0.850	35.0	34	1.47396	156.6	41	15
12	437	6.2	50.3	.856	33.8	33	1.48204	159.0	46	30
13	482	5.3	55.6	.871	31.0	37			59	50
14	527	5.2	60.8	.884	28.6	40			91	65
15	572	6.8	67.6	.893	27.0	41			190	85
Residuum		29.0	96.6	.967	14.8					

Carbon residuo, Conradson: Residuum, 8.7 percent; crude, 2.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	13.4	0.704	69.5	
Total gasoline and naphtha	27.1	0.743	58.9	
Kerosine distillate	3.9	.818	41.5	
Gas oil	17.9	.843	36.4	
Nonviscous lubricating distillate	9.9	.860-.885	33.0-28.4	50-100
Medium lubricating distillate	6.1	.885-.894	28.4-26.8	100-200
Viscous lubricating distillate	2.7	.894-.899	26.8-25.9	Above 200
Residuum	29.0	.967	14.8	
Distillation loss	3.4			

Bureau of Mines Bartlesville Laboratory Item 129
Sample 67057

IDENTIFICATION

Fosterton-Dollard field
Cretaceous-Jurassic

North America
Canada
Saskatchewan

GENERAL CHARACTERISTICS

Gravity, specific, 0.919 Gravity, ° API, 22.5 Pour point, ° F., 20
Sulfur, percent, 2.90 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 187 sec.; 130°F, 111 sec. Nitrogen, percent, 0.199

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 746 mm. Hg
First drop, 79 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	1.3	1.3	0.630	93.1					
2	167	1.5	2.8	.669	80.0	7.0	1.37285	125.5		
3	212	2.1	4.9	.700	70.6	12	1.39154	127.8		
4	257	2.9	7.8	.728	62.9	16	1.40583	131.1		
5	302	3.1	10.9	.752	56.7	20	1.41919	136.8		
6	347	3.6	14.5	.776	50.8	24	1.43176	142.4		
7	392	3.4	17.9	.796	46.3	28	1.44307	144.1		
8	437	3.3	21.2	.815	42.1	31	1.45250	148.6		
9	482	4.1	25.3	.831	38.8	33	1.46177	153.9		
10	527	4.9	30.2	.851	34.8	38	1.47186	162.2		

STAGE 2—Distillation continued at 40 mm. Hg

11	392	2.9	33.1	0.876	30.0	46	1.48357	167.9	40	5
12	437	5.0	38.1	.890	27.5	49	1.48931	173.4	47	25
13	482	5.3	43.4	.901	25.5	51	1.49818	179.3	61	45
14	527	5.4	48.8	.918	22.6	56	1.50801		98	60
15	572	6.3	55.1	.926	21.3	56			195	90
Residuum		44.3	99.4	1.023	6.8					

Carbon residue, Conradson: Residuum, 8.3 percent; crude, 4.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	4.9	0.672	79.1	
Total gasoline and naphtha	17.9	0.739	59.9	
Kerosine distillate	3.3	.815	42.1	
Gas oil	15.5	.859	33.3	
Nonviscous lubricating distillate	9.5	.892-.918	27.1-22.6	50-100
Medium lubricating distillate	6.0	.918-.926	22.6-21.2	100-200
Viscous lubricating distillate	2.9	.926-.930	21.2-20.6	Above 200
Residuum	44.3	1.023	6.8	
Distillation loss	0.6			

Bureau of Mines Bartlesville Laboratory Item 130
Sample 51086

IDENTIFICATION

Golden Spike field
D-3, Devonian

North America
Canada
Alberta

GENERAL CHARACTERISTICS

Gravity, specific, 0.839 Gravity, ° API, 37.2 Pour point, ° F., below 5
Sulfur, percent, 0.24 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 42 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 750 mm. Hg
First drop, 88 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167	6.6	6.6	0.650	86.2		1.37884	124.6		
3	212	4.9	11.5	.714	66.7	18	1.39684	126.1		
4	257	5.9	17.4	.743	58.9	23	1.41092	127.5		
5	302	4.8	22.2	.763	54.0	25	1.42285	131.7		
6	347	4.9	27.1	.785	48.8	29	1.43537	141.7		
7	392	3.9	31.0	.802	44.9	31	1.44600	147.7		
8	437	4.5	35.5	.817	41.7	32	1.45425	148.5		
9	482	4.6	40.1	.828	39.4	32	1.45978	151.0		
10	527	5.6	45.7	.840	37.0	33	1.46707	155.9		

STAGE 2—Distillation continued at 40 mm. Hg

11	392	3.7	49.4	0.853	34.4	35	1.47511	157.7	40	10
12	437	5.5	54.9	.859	33.2	34	1.48399	160.9	46	25
13	482	4.7	59.6	.876	30.0	39			59	45
14	527	5.2	64.8	.883	28.8	39			85	70
15	572	5.6	70.4	.897	26.3	43			160	85
Residuum		25.9	96.3	.957	16.4					

Carbon residue, Conradson: Residuum, 7.4 percent; crude, 2.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	11.5	0.677	77.5	
Total gasoline and naphtha	31.0	0.736	60.8	
Kerosine distillate	4.5	.817	41.7	
Gas oil	18.3	.845	36.0	
Nonviscous lubricating distillate	9.6	.864-.886	32.3-28.2	50-100
Medium lubricating distillate	7.0	.886-.904	28.2-25.0	100-200
Viscous lubricating distillate				Above 200
Residuum	25.9	.957	16.4	
Distillation loss	3.7			

Bureau of Mines Bartlesville Laboratory Item 131
Sample 52038

IDENTIFICATION

Golden Spike field
D-3, Devonian
6,300 - 6,400 feet

North America
Canada
Alberta

GENERAL CHARACTERISTICS

Gravity, specific, 0.849 Gravity, ° API, 35.2 Pour point, ° F, 20
Sulfur, percent, 0.23 Color, greenish black
Viscosity, Saybolt Universal at 100° F, 44 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 744 mm. Hg
First drop, 84 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis. 100° F.	Cloud test, ° F.
1	122	2.2	2.2	0.638	90.3		1.37470	124.1		
2	167	2.7	4.9	.666	81.0	5.6	1.39891	125.1		
3	212	6.0	10.9	.718	65.8	20	1.41260	128.9		
4	257	6.0	16.9	.744	58.7	24	1.42470	135.3		
5	302	5.1	22.0	.763	54.0	25	1.43800	143.1		
6	347	5.2	27.2	.789	47.8	31	1.44938	147.9		
7	392	4.8	32.0	.806	44.1	32	1.45660	150.0		
8	437	4.6	36.6	.820	41.1	33	1.46197	151.8		
9	482	5.1	41.7	.831	38.8	33	1.46960	157.6		
10	527	6.7	48.4	.842	36.6	34				

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis. 100° F.	Cloud test, ° F.
11	392	2.3	50.7	0.852	34.6	35	1.47440	158.6	40	10
12	437	5.9	56.6	.858	33.4	34	1.48602	161.3	45	30
13	482	5.2	61.8	.869	31.3	36			57	50
14	527	4.6	66.4	.883	28.8	39			81	70
15	572	7.0	73.4	.897	26.3	43			150	85
Residuum		25.9	99.3	.941	15.7					

Carbon residue, Conradson: Residuum, 8.0 percent; crude, 1.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	10.9	0.689	73.9	
Total gasoline and naphtha	32.0	0.745	58.4	
Kerosene distillate	4.6	.820	41.1	
Gas oil	19.5	.845	36.0	
Nonviscous lubricating distillate	9.6	.864-.887	32.3-28.0	50-100
Medium lubricating distillate	7.7	.887-.905	28.0-24.9	100-200
Viscous lubricating distillate				Above 200
Residuum	25.9	.941	15.7	
Distillation loss	0.7			

Bureau of Mines Bartlesville Laboratory Item 132
Sample 71078

IDENTIFICATION

Swan Hills, South field
Beaverhill Lake, Devonian
8,441-8,791 feet

North America
Canada
Alberta

GENERAL CHARACTERISTICS

Gravity, specific, 0.826 Gravity, ° API, 39.8 Pour point, ° F, below 5
Sulfur, percent, 0.11 Color, brownish green
Viscosity, Saybolt Universal at 100° F, 39 sec. at 100° F, 37 sec. Nitrogen, percent, 0.056

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 747 mm. Hg
First drop, 79 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis. 100° F.	Cloud test, ° F.
1	122	2.4	2.4	0.546	87.5		1.37839	128.5		
2	167	2.5	4.9	.678	77.2	11	1.40010	131.1		
3	212	6.3	11.2	.719	65.3	21	1.41353	133.7		
4	257	7.2	18.4	.744	58.7	24	1.42544	142.5		
5	302	6.3	24.7	.766	53.2	26	1.43677	142.6		
6	347	6.6	31.3	.786	48.5	29	1.44466	143.4		
7	392	4.3	36.1	.801	45.2	30	1.45105	149.7		
8	437	5.4	41.5	.811	43.0	30	1.45800	149.9		
9	482	5.7	47.2	.823	40.4	30	1.46431	150.6		
10	527	4.9	52.1	.834	38.2	30				

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis. 100° F.	Cloud test, ° F.
11	392	4.9	57.0	0.852	34.6	35	1.47077	153.2	39	15
12	437	7.4	64.4	.860	33.0	35	1.47527	154.2	46	40
13	482	4.9	69.3	.875	30.2	38	1.48416	158.0	58	60
14	527	4.5	73.8	.882	28.9	39			84	80
15	572	5.4	79.2	.891	27.3	40			110	100
Residuum		18.7	97.9	.948	17.8					

Carbon residue, Conradson: Residuum, 5.7 percent; crude, 1.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	11.2	0.694	72.3	
Total gasoline and naphtha	36.1	0.748	57.8	
Kerosene distillate	11.1	.817	41.7	
Gas oil	15.6	.849	35.2	
Nonviscous lubricating distillate	11.8	.865-.888	32.1-27.9	50-100
Medium lubricating distillate	4.6	.888-.896	27.9-26.4	100-200
Viscous lubricating distillate				Above 200
Residuum	18.7	.948	17.8	
Distillation loss	2.1			

Bureau of Mines Bartlesville Laboratory Item 133
Sample 51085

IDENTIFICATION

Wizard Lake field
D-3, Devonian
6,847 feet

North America
Canada
Alberta

GENERAL CHARACTERISTICS

Gravity, specific, 0.840 Gravity, ° API, 37.0 Pour point, ° F., below 5
Sulfur, percent, 0.24 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 41 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 750 mm. Hg
First drop, 81 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1	122	2.6	2.6							
2	167	2.5	5.1	0.662	82.2	-	1.38246	123.4		
3	212	5.8	10.9	.716	66.1	19	1.39870	124.9		
4	237	7.0	17.9	.744	58.7	24	1.41204	128.4		
5	302	5.0	22.9	.763	54.0	25	1.42302	133.5		
6	347	5.6	28.5	.784	49.0	28	1.43529	139.0		
7	392	4.6	33.1	.803	44.7	31	1.44630	142.8		
8	437	4.8	37.9	.817	41.7	32	1.45408	145.0		
9	482	5.0	42.9	.829	39.2	32	1.46036	148.6		
10	527	5.7	48.6	.841	36.8	33	1.46524	155.2		

Stage 2—Distillation continued at 40 mm. Hg

11	392	3.1	51.7	0.857	33.6	37	1.47606	158.4	41	10
12	437	6.1	57.8	.861	32.8	35	1.48514	160.4	48	30
13	482	4.9	62.7	.875	30.2	38			57	45
14	527	5.4	68.1	.888	27.8	41			91	70
15	572	5.5	73.6	.900	25.7	44			170	85
Residuum		23.9	97.5	.958	16.2					

Carbon residue, Conradson: Residuum, 7.7 percent; crude, 2.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	10.9	0.691	73.3	
Total gasoline and naphtha	33.1	0.744	58.7	
Kerosene distillate	4.8	.817	41.7	
Gas oil	18.3	.846	35.8	
Nonviscous lubricating distillate	10.0	.865-.890	32.1-27.5	50-100
Medium lubricating distillate	6.7	.890-.904	27.5-25.0	100-200
Viscous lubricating distillate	0.7	.904-.906	25.0-24.7	Above 200
Residuum	23.9	.958	16.2	
Distillation loss	2.5			

Bureau of Mines Bartlesville Laboratory Item 134
Sample 70061

IDENTIFICATION

Cerro Dragon-Canadian Grande field
Cretaceous
4,260 - 6,100 feet

South America
Argentina
Chubut

GENERAL CHARACTERISTICS

Gravity, specific, 0.923 Gravity, ° API, 21.8 Pour point, ° F., 55
Sulfur, percent, 0.18 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 3.159 sec.; 130°F, 1.167 sec. Nitrogen, percent, 0.364

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 741 mm. Hg
First drop, 142 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	1.9	1.9	0.705	69.2	-	1.39420	122.7		
4	257	1.4	3.3	.745	58.4	24	1.40763	122.3		
5	302	1.4	4.7	.765	53.5	26	1.41563	126.7		
6	347	1.7	6.4	.780	49.9	26	1.42317	128.0		
7	392	2.0	8.4	.795	46.5	27	1.43318	129.8		
8	437	2.2	10.6	.815	42.1	31	1.44335	132.7		
9	482	3.4	14.0	.835	38.0	35	1.45419	136.9		
10	527	5.0	19.0	.845	36.0	35	1.46315	142.3		

Stage 2—Distillation continued at 40 mm. Hg

11	392	3.4	22.4	0.875	30.2	45	1.47524	143.7	45	15
12	437	4.9	27.3	.887	28.0	47	1.48149	147.2	58	50
13	482	3.7	31.0	.897	26.2	49			85	65
14	527	5.1	36.1	.904	25.0	49			138	90
15	572	4.0	40.1	.911	23.8	49			-	100
Residuum		59.6	99.7	.969	14.5					

Carbon residue, Conradson: Residuum, 5.4 percent; crude, 3.4 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	1.9	0.705	69.2	
Total gasoline and naphtha	8.4	0.758	55.1	
Kerosene distillate	2.2	.815	42.1	
Gas oil	11.7	.851	34.9	
Nonviscous lubricating distillate	8.1	.880-.899	29.4-25.9	50-100
Medium lubricating distillate	7.9	.899-.911	25.9-23.8	100-200
Viscous lubricating distillate	1.8	.911-.914	23.8-23.3	Above 200
Residuum	59.6	.969	14.5	
Distillation loss	0.3			

1/ Distillation discontinued at 545°F.

Bureau of Mines Bartlesville Laboratory Item 135
Sample 70012

IDENTIFICATION

Payoa field
La Paz, Eocene
7,000-11,000 feet

South America
Colombia

GENERAL CHARACTERISTICS

Gravity, specific, 0.859 Gravity, ° API, 33.2 Pour point, ° F, 40
Sulfur, percent, 0.83 Color, greenish black
Viscosity, Saybolt Universal at 77°F, 61 sec.; 100°F, 50 sec. Nitrogen, percent, 0.147

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 732 mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1	122	2.1	2.1	0.638	90.3					
2	167	2.6	4.7	0.670	79.7	7.5	1.39257	127.8		
3	212	4.2	8.9	0.710	67.8	17	1.40106	130.2		
4	257	5.8	14.7	0.738	60.2	21	1.41135	137.6		
5	302	5.0	19.7	0.758	55.2	23	1.42325	139.3		
6	347	4.7	24.4	0.775	51.1	24	1.43210	140.5		
7	392	3.8	28.2	0.791	47.4	25	1.43958	141.7		
8	437	4.2	32.4	0.802	44.9	25	1.44668	141.0		
9	482	4.4	36.8	0.818	41.5	27	1.45492	146.2		
10	527	4.5	41.3	0.831	38.8	29	1.46292	152.2		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
11	392	5.0	46.3	0.854	34.2	36	1.47186	154.5	42	20
12	437	5.1	51.4	0.862	32.7	36	1.47616	156.2	49	40
13	482	4.7	56.1	0.876	30.0	39	1.48357	158.0	65	60
14	527	4.6	60.7	0.883	28.7	39			97	75
15	572	5.1	65.8	0.892	27.1	40			-	100
Residuum		33.2	99.0	0.968	14.7					

Carbon residue, Conradson: Residuum, 11.3 percent; crude, 4.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.9	0.681	76.2	
Total gasoline and naphtha	28.2	0.737	60.5	
Kerosene distillate	8.6	0.810	43.2	
Gas oil	12.3	0.847	35.5	
Nonviscous lubricating distillate	9.4	0.863-883	32.5-28.7	50-100
Medium lubricating distillate	5.6	0.883-894	28.7-26.8	100-200
Viscous lubricating distillate	1.7	0.894-897	26.8-26.3	Above 200
Residuum	33.2	0.968	14.7	
Distillation loss	1.0			

Bureau of Mines Bartlesville Laboratory Item 136
Sample 49044

IDENTIFICATION

Velasquez field
Guaduas F, Eocene
7,067 - 7,097 feet

South America
Colombia
Boyaca

GENERAL CHARACTERISTICS

Gravity, specific, 0.914 Gravity, ° API, 23.3 Pour point, ° F, below 5
Sulfur, percent, 1.03 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 250 sec.; 130°F, 125 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 750 mm. Hg
First drop, 142 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1	122	0.3	0.3	0.670	79.7	-	1.38468	123.1		
2	167	1.2	1.5	0.698	71.2	11	1.39859	126.1		
3	212	1.9	3.4	0.725	63.7	15	1.41142	128.2		
4	257	2.1	5.5	0.759	54.9	23	1.42352	137.4		
5	302	2.4	7.9	0.784	49.0	28	1.43469	139.6		
6	347	2.6	10.5	0.801	45.2	30	1.44339	140.0		
7	392	5.3	13.8	0.815	42.1	31	1.45084	139.0		
8	437	4.7	18.5	0.831	38.8	33	1.45889	141.8		
9	482	7.7	26.2	0.850	35.0	38	1.46888	149.5		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
11	392	2.7	28.9	0.863	32.5	40	1.47896	151.9	43	Below 5
12	437	7.1	36.0	0.875	30.2	42	1.48772	156.3	51	20
13	482	6.6	42.6	0.892	27.1	46			71	40
14	527	6.3	48.9	0.907	24.5	50			130	65
15	572	9.3	58.2	0.917	22.8	52			280	80
Residuum		40.2	98.4	0.988	11.7					

Carbon residue, Conradson: Residuum, 14.6 percent; crude, 6.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	1.5	0.692	73.0	
Total gasoline and naphtha	10.5	0.764	53.7	
Kerosene distillate	3.3	0.815	42.1	
Gas oil	18.0	0.850	35.0	
Nonviscous lubricating distillate	10.7	0.873-899	30.6-25.9	50-100
Medium lubricating distillate	6.9	0.899-911	25.9-23.8	100-200
Viscous lubricating distillate	8.6	0.911-923	23.8-21.8	Above 200
Residuum	40.2	0.988	11.7	
Distillation loss	1.6			

Bureau of Mines Bartlesville Laboratory
Sample 71074

Item 137

IDENTIFICATION

Composite

South America
Ecuador

GENERAL CHARACTERISTICS

Gravity, specific, 0.890 Gravity, ° API, 27.5 Pour point, ° F., 40
Sulfur, percent, 0.77 Color, brownish black
Viscosity, Saybolt Universal at 77° F., 145 sec.; at 100° F., 89 sec. Nitrogen, percent, 0.184

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 745 mm. Hg

First drop, 113 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167	2.7	2.7	0.666	81.0	-	1.38616	121.0		
3	212	3.1	5.8	.703	69.8	13	1.39266	123.0		
4	237	4.4	10.2	.736	60.8	20	1.40905	126.4		
5	302	2.8	13.0	.761	54.4	24	1.42154	129.3		
6	347	3.6	16.6	.781	49.7	27	1.43224	131.7		
7	392	3.4	20.0	.798	45.8	29	1.44165	135.9		
8	437	3.9	23.9	.813	42.5	30	1.45105	138.4		
9	482	3.9	27.8	.829	39.2	32	1.46043	147.0		
10	527	5.4	33.2	.845	36.0	35	1.47101	149.8		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	4.2	37.4	0.867	31.7	42	1.48073	156.4	41	20
12	437	6.0	43.4	.873	30.6	41	1.48339	160.3	46	40
13	482	7.0	50.4	.883	28.7	42	1.48973	161.5	59	60
14	527	5.6	56.0	.888	27.8	41			91	80
15	572	4.4	60.4	.894	26.8	41			141	95
Residuum		38.5	98.9	.993	11.0					

Carbon residue, Conradson: Residuum, 8.2 percent; crude, 3.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	5.8	0.686	74.8	
Total gasoline and naphtha	20.0	0.744	58.8	
Kerosine distillate	3.9	.813	42.5	
Gas oil	18.5	.854	34.2	
Nonviscous lubricating distillate	11.7	.876-.889	30.0-27.7	50-100
Medium lubricating distillate	6.3	.889-.907	27.7-26.3	100-200
Viscous lubricating distillate				Above 200
Residuum	38.5	.993	11.0	
Distillation loss	1.1			

Bureau of Mines Bartlesville Laboratory
Sample 52029

Item 138

IDENTIFICATION

Amana field
Eocene

South America
Venezuela
Zulia

GENERAL CHARACTERISTICS

Gravity, specific, 0.866 Gravity, ° API, 31.9 Pour point, ° F., 45
Sulfur, percent, 0.69 Color, dark green
Viscosity, Saybolt Universal at 77° F., 70 sec.; 100° F., 55 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 743 mm. Hg

First drop, 86 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	1.4	1.4							
2	167	1.4	2.8	0.668	80.3	-	1.37386	128.6		
3	212	2.9	5.7	.709	68.1	16	1.39594	133.4		
4	237	5.0	10.7	.746	58.2	25	1.41600	141.6		
5	302	5.1	15.8	.769	52.5	28	1.42924	146.5		
6	347	4.3	20.1	.787	48.3	30	1.43811	147.4		
7	392	4.4	24.5	.799	45.6	29	1.44442	144.4		
8	437	4.8	29.3	.815	42.1	31	1.45188	144.2		
9	482	5.6	34.9	.831	38.8	33	1.46101	150.1		
10	527	6.3	41.2	.847	35.6	36	1.47023	157.5		

STAGE 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
11	392	2.3	43.5	0.860	33.0	38	1.47828	160.3	40	10
12	437	7.2	50.7	.865	32.1	37	1.48733	162.4	45	25
13	482	6.7	57.4	.877	29.9	39			59	50
14	527	5.9	63.3	.891	27.3	43			87	70
15	572	6.4	69.7	.903	25.2	46			155	85
Residuum		30.0	99.7	.963	15.4					

Carbon residue, Conradson: Residuum, 7.8 percent; crude, 2.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	5.7	0.689	73.9	
Total gasoline and naphtha	24.5	0.754	56.2	
Kerosine distillate	4.8	.815	42.1	
Gas oil	20.5	.850	35.0	
Nonviscous lubricating distillate	11.8	.870-.893	31.1-27.0	50-100
Medium lubricating distillate	8.1	.893-.909	27.0-24.2	100-200
Viscous lubricating distillate				Above 200
Residuum	30.0	.963	15.4	
Distillation loss	0.3			

Bureau of Mines Bartlesville Laboratory Item 139
Sample 57123

IDENTIFICATION

Bachaquero field
Miocene

South America
Venezuela
Zulia

GENERAL CHARACTERISTICS

Gravity, specific, 0.968 Gravity, ° API, 14.7 Pour point, ° F., 20
Sulfur, percent, 2.62 Color, brownish black
Viscosity, Saybolt Universal at 100°F. 3.310 sec. 130°F. 1.160 sec. Nitrogen, percent, 0.370

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 737 mm. Hg
First drop, 136 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	0.9	0.9	0.779	50.1	-				
4	257	1.6	1.5	.782	49.5	42				
5	302	1.1	2.6	.790	47.6	38				
6	347	1.3	3.9	.796	46.3	34				
7	392	1.8	5.7	.823	40.4	41				
8	437	2.5	8.2	.844	36.2	45	1.44282	138.8		
9	482	3.6	11.8	.861	32.8	48	1.47246	146.6		
10	527									

STAGE 2—Distillation continued at 40 mm. Hg

11	392	5.7	17.5	0.884	28.6	50	1.48733	-	41	Below 5
12	437	5.6	23.1	.905	24.9	56	1.49936	-	54	do.
13	482	6.2	29.3	.925	21.5	62	1.51027	-	87	20
14	527	4.1	33.4	.940	19.0	60	1.51916	-	160	44
15	572									
Residuum		65.0	98.4	1.016	7.8					

Carbon residue, Conradson: Residuum, 9.6 percent; crude, 6.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	0.9	0.779	50.1	
Total gasoline and naphtha	5.7	0.799	45.6	
Kerosine distillate				
Gas oil	13.0	.871	31.0	
Nonviscous lubricating distillate	8.5	.899-.929	25.9-20.8	50-100
Medium lubricating distillate	6.2	.929-.960	20.8-15.9	100-200
Viscous lubricating distillate				Above 200
Residuum	65.0	1.016	7.8	
Distillation loss	1.6			

17/ Distillation discontinued at 482°F.

2/ Distillation discontinued at 509°F.

Bureau of Mines Bartlesville Laboratory Item 140
Sample 70025

IDENTIFICATION

Bachaquero field
Miocene

South America
Venezuela

GENERAL CHARACTERISTICS

Gravity, specific, 0.965 Gravity, ° API, 15.1 Pour point, ° F., 35
Sulfur, percent, 2.68 Color, brownish black
Viscosity, Saybolt Universal at 100°F. 4.441 sec. 130°F. 1.198 sec. Nitrogen, percent, 0.340

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 744 mm. Hg
First drop, 140 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	257	1.5	1.5	0.729	62.6	-	1.40431	127.3		
5	302	0.9	2.4	.763	54.0	25	1.42215	133.5		
6	347	1.2	3.6	.781	49.7	27	1.43380	133.6		
7	392	1.4	5.0	.812	42.8	35	1.46654	140.2		
8	437	2.2	7.2	.833	38.4	40	1.45784	141.0		
9	482	3.5	10.7	.854	34.2	44	1.46877	145.8		
10	527	4.7	15.4	.873	30.6	49	1.47976	154.6		

STAGE 2—Distillation continued at 40 mm. Hg

11	392	2.1	17.5	0.901	25.5	58	1.49226	166.9	44	Below 5
12	437	4.9	22.4	.909	24.2	58	1.49902	167.8	55	do.
13	482	5.3	27.7	.921	22.1	60			81	do.
14	527	9.5	37.2	.938	19.4	65			183	do.
15	572	10.2	47.4	.947	17.9	66			455	do.
Residuum		51.6	99.0	1.031	5.7					

Carbon residue, Conradson: Residuum, 11.7 percent; crude, 6.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha	5.0	0.771	52.1	
Kerosine distillate				
Gas oil	13.4	.868	31.5	
Nonviscous lubricating distillate	8.1	.905-.924	24.8-21.6	50-100
Medium lubricating distillate	6.6	.924-.939	21.6-19.3	100-200
Viscous lubricating distillate	14.3	.939-.952	19.3-17.2	Above 200
Residuum	51.6	1.031	5.7	
Distillation loss	1.0			

Bureau of Mines Bartlesville Laboratory Item 141
Sample 71024

IDENTIFICATION

Boscan field
Eocene-Oligocene

South America
Venezuela

GENERAL CHARACTERISTICS

Gravity, specific, 0.991 Gravity, ° API, 11.3 Pour point, ° F., 95
Sulfur, percent, 5.54 Color, brownish black
Viscosity, Saybolt Universal at 100° F. over 6000 sec. at 130° F. over 6000 sec. Nitrogen, percent, 0.604

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 735 mm. Hg
First drop, 275 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum, percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1.....	122									
2.....	167									
3.....	212									
4.....	257									
5.....	302	1.2	1.2	0.788	48.1	-	1.41948	130.1		
6.....	347	1.0	2.2	.804	44.5	38	1.43110	130.9		
7.....	392	1.4	3.6	.819	41.3	39	1.44460	141.0		
8.....	437	1.7	5.3	.834	38.2	40	1.45692	142.3		
9.....	482	3.8	9.1	.849	35.2	42	1.46801	144.2		
10.....	527	6.0	15.1	.864	32.3	44	1.47657	146.7		

Stage 2—Distillation continued at 40 mm. Hg

11.....	392	1.4	16.5	0.906	24.7	60	1.49842	149.7	48	Below 5
12.....	437	1.4	17.9	.913	23.5	60	1.50133	156.2	55	20
13.....	482	1.9	19.8	.918	22.6	59	1.50377	161.7	61	35
14.....	527	4.3	24.1	.924	21.6	58			81	50
15.....	572	5.9	30.0	.932	20.3	59			106	65
Residuum		66.8	96.8	1.047	3.6					

Carbon residue, Conradson: Residuum, 5.8 percent; crude, 4.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	-	-	-	
Total gasoline and naphtha	3.6	0.805	44.4	
Kerosine distillate	-	-	-	
Gas oil	12.6	.859	33.2	
Nonviscous lubricating distillate	9.6	.908-.930	24.3-20.6	50-100
Medium lubricating distillate	4.2	.930-.937	20.6-19.6	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	66.8	1.047	3.6	
Distillation loss	3.2			

1/ Distillation discontinued at 545° F.

Bureau of Mines Bartlesville Laboratory Item 142
Sample 67069

IDENTIFICATION

Cabimas field
Miocene

South America
Venezuela
Zulia

GENERAL CHARACTERISTICS

Gravity, specific, 0.921 Gravity, ° API, 22.1 Pour point, ° F., below 5
Sulfur, percent, 1.71 Color, brownish black
Viscosity, Saybolt Universal at 100° F., 280 sec.; 130° F., 174 sec. Nitrogen, percent, 0.223

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 746 mm. Hg
First drop, 82 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum, percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1.....	122	0.5	0.5	0.652	85.5					
2.....	167	1.0	1.5	.666	81.0	5.6	1.37173	123.5		
3.....	212	1.7	3.2	.704	69.5	14	1.39484	129.5		
4.....	257	2.4	5.6	.735	61.0	19	1.41041	134.6		
5.....	302	2.7	8.3	.759	54.9	23	1.42337	137.1		
6.....	347	2.8	11.1	.782	49.4	27	1.43428	140.9		
7.....	392	2.8	13.9	.802	44.9	31	1.44502	143.4		
8.....	437	3.3	17.2	.821	40.9	34	1.45514	147.4		
9.....	482	4.2	21.4	.840	37.0	38	1.46528	153.1		
10.....	527	4.9	26.3	.855	34.0	40	1.47405	161.3		

Stage 2—Distillation continued at 40 mm. Hg

11.....	392	2.9	29.2	0.880	29.3	48	1.48344	164.4	42	Below 5
12.....	437	5.1	34.3	.889	27.7	48	1.48958	171.1	51	do.
13.....	482	5.9	40.2	.903	25.2	52	1.49944	181.4	73	do.
14.....	527	6.6	46.8	.921	22.1	57	1.50811	-	135	do.
15.....	572									
Residuum		52.9	99.7	.990	11.4					

Carbon residue, Conradson: Residuum, 7.7 percent; crude, 4.4 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	3.2	0.684	75.4	
Total gasoline and naphtha	13.9	0.751	56.9	
Kerosine distillate	3.3	.821	40.9	
Gas oil	14.1	.860	33.0	
Nonviscous lubricating distillate	8.7	.888-.911	27.8-23.9	50-100
Medium lubricating distillate	6.8	.911-.931	23.9-20.6	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	52.9	.990	11.4	
Distillation loss	0.3			

1/ Distillation discontinued at 520° F.

Bureau of Mines . . . Bartlesville . . . Laboratory . . . Item 143
Sample . . . 70023 . . .

IDENTIFICATION

Chimire field
Miocene and Oligocene

South America
Venezuela

GENERAL CHARACTERISTICS

Gravity, specific . . . 0.885 . . . Gravity, ° API . . . 28.4 . . . Pour point, ° F. . . 35
Sulfur, percent . . . 1.97 . . . Color . . . brownish black
Viscosity, Saybolt Universal at 77°F. 80 sec.; 100°F. 57 sec. . . Nitrogen, percent . . . 0.156

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 735 mm. Hg
First drop . . . 104 . . .

Fraction No.	Percent	Sum, percent	Sp. gr. 60/60°F.	° API, 60/60°F.	Cl. 1	Refract. index 20/20°C.	Dist. temp. 20/20°C.	S. V. vis. 100°F.	Cloud test, ° F.
1	1.7	1.7	0.690	73.6	-	1.39722	134.5		
2	2.3	4.0	0.720	65.0	21	1.40723	139.9		
3	4.7	8.7	0.752	56.7	27	1.42179	138.8		
4	4.7	13.4	0.775	51.1	31	1.43253	140.1		
5	4.6	18.0	0.792	47.2	32	1.44070	142.0		
6	4.2	22.2	0.804	44.5	31	1.44567	143.9		
7	5.4	27.6	0.821	40.9	34	1.455.9	145.8		
8	5.8	33.4	0.838	37.4	37	1.46521	153.4		
9	5.9	39.3	0.855	34.0	40	1.47405	155.1		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Percent	Sum, percent	Sp. gr. 60/60°F.	° API, 60/60°F.	Cl. 1	Refract. index 20/20°C.	Dist. temp. 20/20°C.	S. V. vis. 100°F.	Cloud test, ° F.
11	3.4	43.2	0.871	31.0	44	1.48270	156.1	41	5
12	6.2	49.4	0.879	29.5	44	1.48575	162.7	48	30
13	6.0	55.4	0.890	27.5	45	1.49254	163.8	64	60
14	6.4	61.8	0.902	25.4	50			101	80
15	6.3	68.1	0.910	24.0	49			184	95
Residuum	31.2	99.3	0.998	10.3					

Carbon residue, Conradson: Residuum, 14.7 percent; crude, 5.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	4.5	0.709	68.2	
Total gasoline and naphtha	22.7	0.766	53.3	
Kerosene distillate	5.4	0.821	40.9	
Gas oil	19.0	0.857	33.6	
Nonviscous lubricating distillate	11.4	0.880-902	29.2-25.4	50-100
Medium lubricating distillate	7.7	902-912	25.4-23.7	100-200
Viscous lubricating distillate	1.9	912-914	23.7-23.3	Above 200
Residuum	31.2	0.998	10.3	
Distillation loss	0.7			

Bureau of Mines . . . Bartlesville . . . Laboratory . . . Item 144
Sample . . . 70091 . . .

IDENTIFICATION

Dacion field

South America
Venezuela

GENERAL CHARACTERISTICS

Gravity, specific . . . 0.909 . . . Gravity, ° API . . . 24.2 . . . Pour point, ° F. . . below 5
Sulfur, percent . . . 1.29 . . . Color . . . brownish black
Viscosity, Saybolt Universal at 100°F. 781 sec.; 130°F. 138 sec. . . Nitrogen, percent . . . 0.226

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 748 mm. Hg
First drop . . . 97 . . .

Fraction No.	Percent	Sum, percent	Sp. gr. 60/60°F.	° API, 60/60°F.	Cl. 1	Refract. index 20/20°C.	Dist. temp. 20/20°C.	S. V. vis. 100°F.	Cloud test, ° F.
1	1.4	1.4	0.674	78.4	-	1.37626	122.7		
2	2.3	3.7	0.716	66.1	19	1.39869	129.4		
3	2.6	6.3	0.742	59.2	25	1.41323	137.3		
4	3.3	9.6	0.765	53.5	25	1.42662	139.2		
5	3.1	12.7	0.787	49.3	30	1.43735	143.2		
6	3.1	15.8	0.803	44.7	31	1.44549	143.3		
7	4.1	19.9	0.822	40.6	34	1.45435	145.0		
8	4.9	24.8	0.841	36.8	38	1.46425	151.4		
9	5.2	30.0	0.856	33.8	40	1.47327	153.2		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Percent	Sum, percent	Sp. gr. 60/60°F.	° API, 60/60°F.	Cl. 1	Refract. index 20/20°C.	Dist. temp. 20/20°C.	S. V. vis. 100°F.	Cloud test, ° F.
11	4.7	34.7	0.875	30.2	45	1.48274	156.4	42	Below 5
12	6.0	40.7	0.885	28.4	46	1.48763	163.2	50	25
13	5.7	46.4	0.899	25.9	50	1.49573	167.5	68	65
14	6.9	53.3	0.909	24.2	51			125	75
15	7.1	60.4	0.916	23.0	52			-	100
Residuum	38.0	98.4	1.011	8.5					

Carbon residue, Conradson: Residuum, 11.9 percent; crude, 5.0 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	3.7	0.700	70.6	
Total gasoline and naphtha	15.8	0.758	55.2	
Kerosene distillate	4.1	0.822	40.6	
Gas oil	17.8	0.861	32.8	
Nonviscous lubricating distillate	9.4	0.885-905	28.4-24.9	50-100
Medium lubricating distillate	7.1	905-913	24.9-23.4	100-200
Viscous lubricating distillate	6.2	913-920	23.4-22.4	Above 200
Residuum	38.0	1.011	8.5	
Distillation loss	1.6			

Bureau of Mines Bartlesville Laboratory Item 145
Sample 69104

IDENTIFICATION

Guara field
Miocene and Oligocene

South America
Venezuela
Anzoategui

GENERAL CHARACTERISTICS

Gravity, specific, 0.945 Gravity, ° API, 18.2 Pour point, ° F., 20
Sulfur, percent, 2.06 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 1.052 sec.; 130°F., 384 sec. Nitrogen, percent, 0.369

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 135 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	2.0	2.0	0.699	70.9	-	1.41259	147.0		
4	257	2.2	4.2	.751	56.9	27	1.42064	147.1		
5	302	2.4	6.6	.772	51.8	29	1.43127	149.9		
6	347	2.3	8.9	.790	47.6	31	1.43992	149.9		
7	392	2.3	11.2	.805	44.3	32	1.44692	150.4		
8	437	3.1	14.3	.821	40.9	34	1.45503	151.8		
9	482	3.6	17.9	.839	37.2	37	1.46523	152.0		
10	527	4.3	22.2	.854	34.2	40	1.47332	156.8		

STAGE 2—Distillation continued at 40 mm. Hg

11	392	3.4	25.6	0.874	30.4	45	1.48258	162.3	41	Below 5
12	437	6.7	32.3	.887	28.0	47	1.48928	166.2	50	20
13	482	4.9	37.2	.903	25.2	52	1.49779	173.9	71	50
14	527	9.1	46.3	.912	23.7	53			125	70
15	572									
Residuum		53.3	99.6	1.023	6.8					

Carbon residuo, Conradson: Residuum, 11.3 percent; crude, 6.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	2.0	0.699	70.9	
Total gasoline and naphtha	11.2	0.765	53.4	
Kerosine distillate	3.1	.821	40.9	
Gas oil	14.6	.862	32.7	
Nonviscous lubricating distillate	9.6	.887-.908	28.0-24.4	50-100
Medium lubricating distillate	7.8	.908-.918	24.4-22.7	100-200
Viscous lubricating distillate				Above 200
Residuum	53.3	1.023	6.8	
Distillation loss	0.4			

1/ Distillation discontinued at 527°F.

Bureau of Mines Bartlesville Laboratory Item 146
Sample 69105

IDENTIFICATION

Guara field
Miocene and Oligocene

South America
Venezuela
Anzoategui

GENERAL CHARACTERISTICS

Gravity, specific, 0.920 Gravity, ° API, 22.3 Pour point, ° F., below 5
Sulfur, percent, 1.85 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 256 sec.; 130°F., 133 sec. Nitrogen, percent, 0.313

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 81 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122									
2	167	2.3	2.3	0.678	77.2	-	1.38205	133.9		
3	212	1.7	4.0	.704	69.5	14	1.40189	139.8		
4	257	3.6	7.6	.745	58.4	24	1.41514	142.7		
5	302	3.7	11.3	.767	53.0	27	1.42834	144.8		
6	347	3.3	14.6	.785	48.8	29	1.43758	147.8		
7	392	3.2	17.8	.800	45.4	30	1.44432	148.2		
8	437	3.4	21.2	.814	42.3	31	1.45149	149.4		
9	482	4.4	25.6	.834	38.2	35	1.46185	150.4		
10	527	4.5	30.1	.852	34.6	39	1.47163	157.6		

STAGE 2—Distillation continued at 40 mm. Hg

11	392	4.6	34.7	0.874	30.4	45	1.48182	161.5	42	Below 5
12	437	5.5	40.2	.887	28.0	47	1.48736	162.7	51	25
13	482	5.8	46.0	.905	24.9	53	1.49644	166.8	73	60
14	527	5.9	51.9	.911	23.8	52			134	75
15	572	5.7	57.6	.919	22.5	53			240	90
Residuum		42.0	99.6	1.034	5.3					

Carbon residuo, Conradson: Residuum, 11.2 percent; crude, 5.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	4.0	0.689	73.2	
Total gasoline and naphtha	17.8	0.754	56.1	
Kerosine distillate	3.4	.814	42.3	
Gas oil	15.7	.858	33.5	
Nonviscous lubricating distillate	8.8	.886-.908	23.3-24.4	50-100
Medium lubricating distillate	6.9	.908-.916	24.4-23.0	100-200
Viscous lubricating distillate	5.0	.916-.923	23.0-21.8	Above 200
Residuum	42.0	1.034	5.3	
Distillation loss	0.4			

Bureau of Mines Bartlesville Laboratory Item 147
Sample 69106

La Ceibita field

IDENTIFICATION

South America
Venezuela
Anzoategui

GENERAL CHARACTERISTICS

Gravity, specific, 0.829 Gravity, ° API, 39.2 Pour point, ° F, 45
Sulfur, percent, 0.41 Color, brownish black
Viscosity, Saybolt Universal at 77°F, 38 sec.; 100°F, 35 sec. Nitrogen, percent, 0.055

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 746 mm. Hg
First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1.....	122	3.3	3.3	0.640	89.6					
2.....	167	4.5	7.8	.679	76.9	12	1.38254	133.2		
3.....	212	8.1	15.9	.730	62.3	26	1.40728	140.2		
4.....	257	9.6	25.5	.745	58.4	24	1.41867	141.0		
5.....	302	7.9	33.4	.760	54.7	24	1.42420	150.8		
6.....	347	5.9	39.3	.784	49.0	28	1.43770	156.8		
7.....	392	4.2	43.5	.809	43.4	34	1.45135	158.6		
8.....	437	5.1	48.6	.823	40.4	35	1.45949	159.2		
9.....	482	5.4	54.0	.844	36.2	40	1.47174	163.1		
10.....	527	4.8	58.8	.857	33.6	41	1.48009	166.4		

STAGE 2—Distillation continued at 40 mm. Hg

11.....	392	4.9	63.7	0.876	30.0	46	1.48537	167.9	41	15
12.....	437	5.6	69.3	.881	29.1	45	1.48793	171.7	49	50
13.....	482	3.8	73.1	.890	27.5	45			61	70
14.....	527	3.6	76.7	.895	26.6	45			83	80
15.....	572	4.8	81.5	.901	25.5	45			-	100
Residuum		17.6	99.1	.959	16.1					

Carbon residuc, Conradson: Residuum, 6.7 percent; crude, 1.4 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	15.9	0.697	71.5	
Total gasoline and naphtha.....	43.5	0.742	59.3	
Kerosene distillate.....	5.1	.823	40.4	
Gas oil.....	18.3	.862	32.6	
Nonviscous lubricating distillate.....	2.4	.882-.897	29.0-26.2	50-100
Medium lubricating distillate.....	5.2	.897-.904	26.2-25.0	100-200
Viscous lubricating distillate.....	-	-	-	Above 200
Residuum.....	17.6	.959	16.1	
Distillation loss.....	0.9			

Bureau of Mines Bartlesville Laboratory Item 148
Sample 57124

Lagunillas field
Miocene

IDENTIFICATION

South America
Venezuela
Zulia

GENERAL CHARACTERISTICS

Gravity, specific, 0.945 Gravity, ° API, 18.2 Pour point, ° F, below 5
Sulfur, percent, 2.12 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 1,030 sec.; 130°F, 400 sec. Nitrogen, percent, 0.292

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, 732 mm. Hg
First drop, 135 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API. 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1.....	122									
2.....	167									
3.....	212	3.7	3.7	0.711	67.5	-	1.39598	130.1		
4.....	257	1.2	4.9	.771	52.0	36	1.41648	131.8		
5.....	302	1.4	6.3	.776	50.9	31	1.42990	134.2		
6.....	347	2.0	8.3	.798	45.8	35	1.44596	131.7		
7.....	392	1.9	10.2	.813	42.6	36	1.45484	136.5		
8.....	437	3.3	13.5	.835	38.0	41	1.46242	141.4		
9.....	482	3.6	17.1	.852	34.6	43	1.47001	150.2		
10.....	527									

STAGE 2—Distillation continued at 40 mm. Hg

11.....	392	5.0	22.1	0.874	30.4	45	1.48471	159.9	39	Below 5
12.....	437	5.4	27.5	.893	27.0	50	1.49273	162.4	47	10
13.....	482	5.0	32.5	.908	24.3	54	1.50197	-	66	14
14.....	527	3.1	35.6	.920	22.3	57	1.50933	-	97	20
15.....	572									
Residuum		63.8	99.4	.998	10.3					

Carbon residuc, Conradson: Residuum, 8.6 percent; crude, 5.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	3.7	0.711	67.5	
Total gasoline and naphtha.....	10.2	0.763	54.0	
Kerosene distillate.....	-	-	-	
Gas oil.....	15.5	.864	32.3	
Nonviscous lubricating distillate.....	8.8	.895-.921	26.6-22.1	50-100
Medium lubricating distillate.....	1.1	.921-.924	22.1-21.6	100-200
Viscous lubricating distillate.....	-	-	-	Above 200
Residuum.....	63.8	.998	10.3	
Distillation loss.....	0.6			

1/ Distillation discontinued at 482°F.

2/ Distillation discontinued at 500°F.

Bureau of Mines Bartlesville Laboratory
Sample 70029

Item 149

IDENTIFICATION

Lama field

South America
Venezuela

GENERAL CHARACTERISTICS

Gravity, specific, 0.915 Gravity, ° API, 23.1 Pour point, ° F., below 5
Sulfur, percent, 1.47 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 142 sec.; 130°F., 82 sec. Nitrogen, percent, 0.203

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 747 mm. Hg
First drop, 97 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122									
2	167	2.3	2.3	0.695	72.1	-	1.39299	132.2		
3	212	1.9	4.2	.713	67.0	18	1.40991	135.7		
4	257	1.2	5.4	.731	62.1	17	1.42610	138.7		
5	302	2.5	7.9	.767	53.0	27	1.42845	147.2		
6	347	2.9	10.8	.788	48.1	30	1.43916	149.0		
7	392	2.4	13.2	.806	44.1	32	1.44747	150.0		
8	437	3.2	16.4	.824	40.2	35	1.45665	150.0		
9	482	4.9	21.2	.844	36.2	40	1.46759	152.3		
10	527	4.6	25.8	.861	32.8	43	1.47741	156.1		

Stage 2—Distillation continued at 40 mm. Hg

11	392	2.7	28.5	0.883	28.7	49	1.48652	157.6	42	Below 5
12	437	6.6	35.1	.887	28.0	47	1.49080	159.7	51	10
13	482	7.0	42.1	.901	25.5	51			69	40
14	527	6.7	48.8	.915	23.1	54			128	70
15	572	7.2	56.0	.922	22.0	54			250	90
Residuum		42.6	98.6	.997	10.4					

Carbon residue, Conradson: Residuum, 8.7 percent; crude, 4.0 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	4.2	0.703	69.7	
Total gasoline and naphtha	13.2	0.755	55.9	
Kerosine distillate	3.2	.824	40.2	
Gas oil	14.9	.864	32.3	
Nonviscous lubricating distillate	10.9	.887-.908	28.1-24.3	50-100
Medium lubricating distillate	7.4	.908-.919	24.3-22.5	100-200
Viscous lubricating distillate	6.4	.919-.926	22.5-21.4	Above 200
Residuum	42.6	.997	10.4	
Distillation loss	1.4			

Bureau of Mines Bartlesville Laboratory
Sample 70021

Item 150

IDENTIFICATION

Mara field
Cretaceous

South America
Venezuela

GENERAL CHARACTERISTICS

Gravity, specific, 0.882 Gravity, ° API, 28.9 Pour point, ° F., 25
Sulfur, percent, 2.19 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 137 sec.; 100°F., 87 sec. Nitrogen, percent, 0.160

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 742 mm. Hg
First drop, 104 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122									
2	167	2.3	2.3	0.657	83.9	-	1.39740	130.5		
3	212	2.3	4.6	.701	70.4	12	1.40580	133.8		
4	257	3.8	8.4	.727	63.1	16	1.40814	137.6		
5	302	3.8	12.2	.751	56.9	19	1.42166	138.6		
6	347	4.1	16.3	.770	52.3	22	1.43030	139.9		
7	392	4.4	20.7	.784	49.0	22	1.43739	141.2		
8	437	4.3	25.0	.797	46.0	23	1.44415	143.1		
9	482	4.5	29.5	.811	43.0	24	1.45219	146.8		
10	527	4.6	34.1	.824	40.2	25	1.46032	150.2		

Stage 2—Distillation continued at 40 mm. Hg

11	392	2.9	37.0	0.850	35.0	34	1.47101	156.0	39	10
12	437	4.8	41.8	.856	33.8	33	1.47392	158.5	44	30
13	482	5.7	47.5	.867	31.7	35	1.48044	160.0	53	50
14	527	5.5	53.0	.881	29.1	38			75	70
15	572	6.9	59.9	.893	27.0	41			119	90
Residuum		39.1	99.0	.987	11.9					

Carbon residue, Conradson: Residuum, 14.8 percent; crude, 6.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	4.6	0.679	76.9	
Total gasoline and naphtha	20.7	0.741	59.4	
Kerosine distillate	13.4	.811	43.0	
Gas oil	8.8	.855	34.0	
Nonviscous lubricating distillate	10.9	.863-.888	32.4-27.9	50-100
Medium lubricating distillate	6.1	.888-.900	27.9-25.8	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	39.1	.987	11.9	
Distillation loss	1.0			

Bureau of Mines Bartlesville Laboratory Item 151
Sample 70028

IDENTIFICATION

Mara field
Cretaceous

South America
Venezuela

GENERAL CHARACTERISTICS

Gravity, specific, 0.864 Gravity, ° API, 32.3 Pour point, ° F., 80
Sulfur, percent, 0.13 Color, brownish green
Viscosity, Saybolt Universal at 100°F., 42 sec.; 130°F., 40 sec. Nitrogen, percent, 0.016

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 113 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vise, 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	3.5	3.5	0.720	65.0	-	1.49122	164.7		
4	257	4.0	7.5	.782	49.4	42	1.43733	165.6		
5	302	4.4	11.9	.803	44.7	44	1.44654	166.5		
6	347	2.5	14.4	.810	43.2	40	1.45321	167.5		
7	392	2.5	16.9	.815	42.1	37	1.45862	174.9		
8	437	2.5	19.4	.825	40.0	36	1.46621	176.2		
9	482	4.9	24.3	.853	34.4	44	1.47148	177.6		
10	527	5.0	29.3	.868	31.5	46	1.47770	180.8		

Stage 2—Distillation continued at 40 mm. Hg

11	392	5.2	34.5	0.876	30.0	46	1.48284	185.7	38	30
12	437	7.4	41.9	.879	29.5	44	1.49105	190.4	44	50
13	482	9.5	51.4	.882	28.9	42			55	75
14	527	10.7	62.1	.885	28.4	40			-	110
15	572	15.6	77.7	.888	27.8	38			-	125
Residuum		21.9	99.6	.900	25.7					

Carbon residue, Conradson: Residuum, 0.5 percent; crude, 0.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	3.5	0.720	65.0	
Total gasoline and naphtha	16.9	0.784	49.1	
Kerosine distillate	2.5	.825	40.0	
Gas oil	23.4	.871	31.0	
Nonviscous lubricating distillate	20.7	.881-.887	29.2-28.1	50-100
Medium lubricating distillate	14.2	.887-.890	28.1-27.5	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	21.9	.900	25.7	
Distillation loss	0.4			

Bureau of Mines Bartlesville Laboratory Item 152
Sample 69087

IDENTIFICATION

Mata field
Oficina, Miocene-Oligocene
and Merecure, Oligocene
9,000-12,000 feet

South America
Venezuela
Anzoategui

GENERAL CHARACTERISTICS

Gravity, specific, 0.926 Gravity, ° API, 21.3 Pour point, ° F., below 5
Sulfur, percent, 1.59 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 244 sec.; 130°F., 129 sec. Nitrogen, percent, 0.272

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 743 mm. Hg
First drop, 79 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. vise, 100° F.	Cloud test, ° F.
1	122									
2	167	1.7	1.7	0.650	86.2	-	1.40207	138.0		
3	212	1.7	3.4	.693	72.7	8.5	1.40884	139.7		
4	257	2.6	6.0	.748	57.7	26	1.41648	137.8		
5	302	2.9	8.9	.756	55.7	22	1.42896	143.8		
6	347	2.5	11.4	.790	47.6	31	1.43846	141.5		
7	392	2.9	14.3	.807	43.8	33	1.44736	146.3		
8	437	3.1	17.4	.827	39.6	37	1.45687	147.2		
9	482	4.5	21.9	.847	35.6	41	1.46754	148.8		
10	527	4.8	26.7	.862	32.7	43	1.47659	158.7		

Stage 2—Distillation continued at 40 mm. Hg

11	392	4.6	31.3	0.884	28.6	50	1.48673	162.4	43	Below 5
12	437	4.9	36.2	.891	27.3	49	1.49221	163.7	53	15
13	482	5.2	41.4	.902	25.4	51	1.49965	172.4	73	40
14	527	7.3	48.7	.918	22.6	56			136	80
15	572	7.5	56.2	.929	20.8	58			320	95
Residuum		43.0	99.2	1.023	6.8					

Carbon residue, Conradson: Residuum, 11.3 percent; crude, 5.4 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	3.4	0.672	79.2	
Total gasoline and naphtha	14.3	0.751	57.0	
Kerosine distillate	-	-	-	
Gas oil	18.0	.859	33.2	
Nonviscous lubricating distillate	9.2	.889-.909	27.7-24.2	50-100
Medium lubricating distillate	6.1	.909-.922	24.2-22.0	100-200
Viscous lubricating distillate	8.6	.922-.935	22.0-19.9	Above 200
Residuum	43.0	1.023	6.8	
Distillation loss	0.8			

Bureau of Mines Bartlesville Laboratory Item 153
Sample 70066

IDENTIFICATION

Mata field
Oficina, Miocene-Oligocene and Merecure, Oligocene
South America
Venezuela
Anzoátegui

GENERAL CHARACTERISTICS

Gravity, specific, 0.868 Gravity, ° API, 31.5 Pour point, ° F., below 5
Sulfur, percent, 0.60 Color, brownish black
Viscosity, Saybolt Universal at 77°F. 59 sec.; 100°F. 46 sec. Nitrogen, percent, 0.204

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 72 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167	2.7	2.7	0.668	80.3	-	1.37774	129.9		
3	212	3.5	6.2	723	64.2	23	1.40565	142.8		
4	237	5.3	11.5	753	56.4	28	1.42169	149.7		
5	302	5.2	16.7	776	50.8	31	1.43434	151.7		
6	347	3.8	20.5	790	47.6	31	1.44265	154.8		
7	392	3.8	24.3	803	44.7	31	1.44872	155.7		
8	437	4.6	28.9	820	41.1	33	1.45690	159.2		
9	482	5.3	34.2	838	37.4	37	1.46733	162.4		
10	527	5.3	39.5	853	34.4	39	1.47545	166.3		

Stage 2—Distillation continued at 40 mm. Hg

11	392	7.9	47.4	0.879	29.5	47	1.48365	163.1	44	10
12	437	6.5	53.9	894	26.8	51	1.49092	163.0	58	50
13	482	8.0	61.9	903	25.2	52			92	70
14	527	6.3	68.2	910	24.0	52			-	100
15	572									
Residue		28.6	96.8	970	14.4					

Carbon residue, Conradson: Residue, 9.8 percent; crude, 3.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	6.2	0.699	70.9	
Total gasoline and naphtha	24.3	0.738	55.2	
Kerosine distillate	4.6	820	41.1	
Gas oil	17.6	859	33.3	
Nonviscous lubricating distillate	12.0	885-904	28.3-25.1	50-100
Medium lubricating distillate	7.9	904-911	25.1-23.8	100-200
Viscous lubricating distillate	1.8	911-913	23.8-23.5	Above 200
Residue	28.6	970	14.4	
Distillation loss	3.2			

1/ Distillation discontinued at 527°F.

Bureau of Mines Bartlesville Laboratory Item 154
Sample 70015

IDENTIFICATION

Merey field
Oficina, Miocene-Oligocene and Merecure, Oligocene
South America
Venezuela

GENERAL CHARACTERISTICS

Gravity, specific, 0.978 Gravity, ° API, 13.2 Pour point, ° F., 60
Sulfur, percent, 2.52 Color, brownish black
Viscosity, Saybolt Universal at 100°F. over 6000 sec.; 130°F. 3974 sec. Nitrogen, percent, 0.429

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 754 mm. Hg
First drop, 185 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	237									
5	302									
6	347									
7	392	1.9	1.9	0.767	53.0	-	1.43598	142.9		
8	437	2.1	4.0	837	37.6	41	1.45803	144.1		
9	482	3.1	7.1	851	34.8	43	1.46682	147.6		
10	527	5.0	12.1	867	31.7	46	1.47700	152.8		

Stage 2—Distillation continued at 40 mm. Hg

11	392	3.6	15.7	0.894	26.8	54	1.48953	154.9	45	Below 5
12	437	6.1	21.8	905	24.2	56	1.49706	169.7	59	do.
13	482	6.6	28.4	923	21.8	61		107		do.
14	527	4.9	33.3	933	20.2	63		205		10
15	572									
Residue		65.5	98.8	1,024	6.7					

Carbon residue, Conradson: Residue, 12.2 percent; crude, 8.4 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha	1.9	0.767	53.0	
Kerosine distillate				
Gas oil	13.7	866	31.9	
Nonviscous lubricating distillate	8.6	898-920	26.1-22.2	50-100
Medium lubricating distillate	6.4	920-932	22.2-20.2	100-200
Viscous lubricating distillate	2.7	932-937	20.2-19.5	Above 200
Residue	65.5	1,024	6.7	
Distillation loss	1.2			

1/ Distillation discontinued at 509°F.

Bureau of Mines Bartlesville Laboratory
Sample 52026

Item 155

IDENTIFICATION

Oficina field
Miocene and Oligocene

South America
Venezuela
Anzoategui

GENERAL CHARACTERISTICS

Gravity, specific, 0.874 Gravity, ° API, 30.4 Pour point, ° F., below 5
Sulfur, percent, 0.80 Color, brownish black
Viscosity, Saybolt Universal at 77°F., 74 sec.; 100°F., 54 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 84 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. Visc., 100° F.	Cloud test, ° F.
1	122	1.5	1.5							
2	167	2.7	4.2	0.660	82.9	2.7	1.37890	129.1		
3	212	4.3	8.5	.709	68.1	16	1.39795	136.1		
4	237	5.8	14.3	.744	58.7	24	1.41512	140.7		
5	302	5.6	19.9	.768	52.7	27	1.42827	147.0		
6	347	4.4	24.3	.787	48.3	30	1.43780	148.5		
7	392	4.0	28.3	.801	45.2	30	1.44451	145.4		
8	437	4.3	32.6	.814	42.3	31	1.45188	145.3		
9	482	5.3	37.9	.833	38.4	34	1.46130	150.2		
10	527	6.4	44.3	.851	34.8	38	1.47142	157.7		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp., ° F.	Percent	Sum percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. Visc., 100° F.	Cloud test, ° F.
11	392	3.2	47.5	0.867	31.7	42	1.47836	161.2	40	5
12	437	5.0	52.5	.876	30.0	42	1.48825	163.5	46	30
13	482	5.9	58.4	.888	27.9	45			60	45
14	527	5.0	63.4	.903	25.2	49			96	70
15	572	6.4	69.8	.915	23.1	51			190	80
Residuum		30.1	99.9	.997	10.4					

Carbon residue, Conradson: Residuum, 15.9 percent; crude, 5.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	8.5	0.685	75.1	
Total gasoline and naphtha	28.3	0.746	58.2	
Kerosine distillate	4.3	.814	42.3	
Gas oil	19.0	.854	34.2	
Nonviscous lubricating distillate	9.9	.879-.904	29.5-25.0	50-100
Medium lubricating distillate	8.3	.904-.922	25.0-22.0	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	30.1	.997	10.4	
Distillation loss	0.1			

Bureau of Mines Bartlesville Laboratory
Sample 52027

Item 156

IDENTIFICATION

Oficina field
Miocene and Oligocene

South America
Venezuela
Anzoategui

GENERAL CHARACTERISTICS

Gravity, specific, 0.843 Gravity, ° API, 36.4 Pour point, ° F., below 5
Sulfur, percent, 0.48 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 45 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 88 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. Visc., 100° F.	Cloud test, ° F.
1	122	2.9	2.9							
2	167	2.6	5.5	0.654	84.9	-	1.38131	127.1		
3	212	5.7	11.2	.722	64.5	22	1.40289	136.1		
4	237	6.2	17.4	.754	56.2	28	1.42018	145.2		
5	302	7.1	24.5	.775	51.1	31	1.43201	151.2		
6	347	6.2	30.7	.791	47.4	32	1.44091	151.7		
7	392	5.0	35.7	.801	45.2	30	1.44592	148.7		
8	437	5.4	41.1	.816	41.9	32	1.45288	147.7		
9	482	6.2	47.3	.833	38.4	34	1.46270	154.4		
10	527	7.4	54.7	.849	35.2	37	1.47203	162.0		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp., ° F.	Percent	Sum percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. Visc., 100° F.	Cloud test, ° F.
11	392	3.3	58.0	0.861	32.8	39	1.48024	165.9	40	5
12	437	6.7	64.7	.868	31.5	38	1.48973	167.8	45	25
13	482	5.0	69.7	.877	29.9	39			57	45
14	527	5.0	74.7	.886	27.9	40			82	70
15	572	5.1	79.8	.897	26.3	43			140	90
Residuum		20.1	99.9	.979	13.0					

Carbon residue, Conradson: Residuum, 12.6 percent; crude, 2.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	11.2	0.689	73.9	
Total gasoline and naphtha	35.7	0.751	56.9	
Kerosine distillate	5.4	.816	41.9	
Gas oil	22.8	.852	34.6	
Nonviscous lubricating distillate	9.9	.872-.889	30.8-27.7	50-100
Medium lubricating distillate	6.0	.889-.902	27.7-25.4	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	20.1	.979	13.0	
Distillation loss	0.1			

Bureau of Mines Bartlesville Laboratory Item 157
Sample 52028

IDENTIFICATION

Oficina field
Miocene and Oligocene

South America
Venezuela
Anzoategui

GENERAL CHARACTERISTICS

Gravity, specific, 0.858 Gravity, ° API, 33.4 Pour point, ° F., below 5
Sulfur, percent, 0.59 Color, brownish black
Viscosity, Saybolt Universal at 100° F., 48 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 742 mm. Hg
First drop, 86 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1	122	2.7	2.7							
2	167	2.2	4.9	0.660	82.9	-	1.38841	127.7		
3	212	4.1	9.0	.718	65.6	20	1.40068	136.0		
4	257	6.9	15.9	.752	56.7	27	1.41899	143.7		
5	302	6.3	22.2	.771	52.0	29	1.43274	151.6		
6	347	5.4	27.6	.792	47.2	32	1.44141	151.0		
7	392	4.0	31.6	.804	44.3	32	1.44699	147.0		
8	437	5.6	37.2	.819	41.3	33	1.45450	149.1		
9	482	5.7	42.9	.837	37.6	36	1.46442	155.5		
10	527	7.2	50.1	.853	34.4	39	1.47315	161.1		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
11	392	4.0	54.1	0.864	32.3	40	1.48133	164.2	40	10
12	437	6.0	60.1	.871	31.0	40	1.49024	166.1	46	30
13	482	5.3	65.4	.881	29.1	41			59	50
14	527	5.8	71.2	.891	27.3	43			86	70
15	572	5.4	76.6	.898	26.1	43			145	90
Residue		23.3	99.9	.986	12.0					

Carbon residue, Conradson: Residue, 13.8 percent; crude, 3.7 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.0	0.686	74.8	
Total gasoline and naphtha	31.6	0.751	56.9	
Kerosene distillate	5.6	.819	41.3	
Gas oil	21.7	.855	34.0	
Nonviscous lubricating distillate	10.8	.874-.893	30.4-27.0	50-100
Medium lubricating distillate	6.9	.893-.901	27.0-25.6	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residue	23.3	.986	12.0	
Distillation loss	0.1			

Bureau of Mines Bartlesville Laboratory Item 158
Sample 52031

IDENTIFICATION

Oficina field
Miocene and Oligocene

South America
Venezuela
Anzoategui

GENERAL CHARACTERISTICS

Gravity, specific, 0.834 Gravity, ° API, 38.2 Pour point, ° F., below 5
Sulfur, percent, 0.31 Color, greenish black
Viscosity, Saybolt Universal at 100° F., 37 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 88 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
1	122	3.0	3.0	0.650	86.2					
2	167	2.4	5.4	.668	80.3	6.5	1.37616	129.1		
3	212	4.4	9.8	.720	65.0	21	1.40260	139.2		
4	257	7.4	17.2	.757	55.4	30	1.42239	148.7		
5	302	7.0	24.2	.780	49.9	33	1.43557	157.5		
6	347	5.8	30.0	.793	46.9	32	1.44317	156.0		
7	392	5.4	35.4	.805	44.3	32	1.44740	150.1		
8	437	6.0	41.4	.818	41.5	33	1.45439	150.6		
9	482	6.7	48.1	.835	38.0	35	1.46432	157.6		
10	527	8.0	56.1	.849	35.2	37	1.47227	161.3		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. vis., 100° F.	Cloud test, ° F.
11	392	4.2	60.3	0.860	33.0	38	1.48057	163.6	39	5
12	437	8.2	68.5	.867	31.7	38	1.49086	166.7	45	25
13	482	5.7	74.2	.875	30.2	38			58	50
14	527	5.3	79.5	.882	28.9	39			79	70
15	572	5.6	85.1	.891	27.3	40			130	90
Residue		14.6	99.7	.962	15.6					

Carbon residue, Conradson: Residue, 9.0 percent; crude, 1.5 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	9.8	0.686	74.8	
Total gasoline and naphtha	35.4	0.755	55.9	
Kerosene distillate	6.0	.818	41.5	
Gas oil	25.8	.852	34.6	
Nonviscous lubricating distillate	11.9	.870-.886	31.1-28.2	50-100
Medium lubricating distillate	6.0	.886-.896	28.2-26.4	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residue	14.6	.962	15.6	
Distillation loss	0.3			

Bureau of Mines Bartlesville Laboratory
Sample 52032

Item 159

IDENTIFICATION

Oficina field
Miocene and Oligocene

South America
Venezuela
Anzoategui

GENERAL CHARACTERISTICS

Gravity, specific, ... 0.875 Gravity, ° API, ... 30.2 Pour point, ° F., ... below 5
Sulfur, percent, ... 0.77 Color, ... brownish black
Viscosity, Saybolt Universal at 77°F., 75 sec.; 100°F., 54 sec. Nitrogen, percent, ... -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, ... 745 mm. Hg
First drop, ... 90 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum, percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122	2.3	2.3							
2	167	1.7	4.0	0.633	81.9	-	1.38041	123.1		
3	212	3.3	7.3	.718	65.6	20	1.40068	133.3		
4	257	4.8	12.1	.751	56.9	27	1.41772	140.8		
5	302	4.7	16.8	.773	51.6	30	1.43087	149.2		
6	347	4.5	21.3	.791	47.4	32	1.44040	150.1		
7	392	3.9	25.2	.804	44.5	32	1.44647	147.1		
8	437	4.5	29.7	.820	41.1	33	1.45417	147.8		
9	482	5.3	35.0	.837	37.6	36	1.46455	154.9		
10	527	7.0	42.0	.854	34.2	40	1.47419	161.8		

Stage 2—Distillation continued at 40 mm. Hg

11	392	3.0	45.0	0.863	32.5	40	1.48237	163.7	40	5
12	437	7.0	52.0	.871	31.0	40	1.49100	165.7	46	25
13	482	6.1	58.1	.882	28.9	42			59	50
14	527	9.9	64.0	.895	26.6	45			86	70
15	572	6.7	70.7	.903	25.2	46			155	90
Residuum		29.2	99.9	.993	11.0					

Carbon residue, Conradson: Residuum, 14.9 percent; crude, 4.9 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	7.3	0.688	74.2	
Total gasoline and naphtha	25.2	0.752	56.7	
Kerosine distillate	4.5	.820	41.1	
Gas oil	20.9	.855	34.0	
Nonviscous lubricating distillate	11.7	.874-.896	30.4-26.4	50-100
Medium lubricating distillate	8.4	.896-.907	26.4-24.5	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	29.2	.993	11.0	
Distillation loss	0.1			

Bureau of Mines Bartlesville Laboratory
Sample 70016

Item 160

IDENTIFICATION

Pilon field
Miocene and Oligocene

South America
Venezuela

GENERAL CHARACTERISTICS

Gravity, specific, ... 0.973 Gravity, ° API, ... 13.9 Pour point, ° F., ... 65
Sulfur, percent, ... 2.11 Color, ... brownish black
Viscosity, Saybolt Universal at 100°F., over 6000 sec.; 130°F., 2299 sec. Nitrogen, percent, ... 0.360

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, ... 754 mm. Hg
First drop, ... 185 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum, percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	257									
5	302									
6	347									
7	392	1.9	1.9	0.801	45.2	-	1.44028	136.1		
8	437	2.4	4.3	.838	37.4	42	1.45881	136.5		
9	482	3.9	8.2	.860	33.0	47	1.46956	143.7		
10	527	5.2	13.4	.872	30.8	48	1.47880	149.1		

Stage 2—Distillation continued at 40 mm. Hg

11	392	4.0	17.4	0.900	25.7	57	1.49150	156.0	47	Below 5
12	437	6.4	23.8	.913	23.5	60	1.49992	164.9	65	do
13	482	5.9	29.7	.925	21.5	62			114	do
14	527	6.5	36.2	.939	19.2	66			275	10
15	572	4.3	40.5	.948	17.9	67			445	20
Residuum		58.4	98.9	1.022	7.0					

Carbon residue, Conradson: Residuum, 11.9 percent; crude, 7.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha	1.9	0.801	45.2	
Kerosine distillate	-	-	-	
Gas oil	14.4	.868	31.5	
Nonviscous lubricating distillate	8.7	.902-.922	25.3-22.0	50-100
Medium lubricating distillate	5.1	.922-.932	22.0-20.2	100-200
Viscous lubricating distillate	10.4	.932-.952	20.2-17.2	Above 200
Residuum	58.4	1.022	7.0	
Distillation loss	1.1			

Bureau of Mines Bartlesville Laboratory Item 161
Sample 70022

Quiriquire field
Pliocene

IDENTIFICATION

South America
Venezuela

GENERAL CHARACTERISTICS

Gravity, specific 0.960 Gravity, ° API 15.9 Pour point, ° F. 15
Sulfur, percent, 1.33 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 725 sec.; 130°F., 290 sec. Nitrogen, percent, 0.225

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure. 742 mm. Hg
First drop, 270 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	257									
5	302									
6	347	1.4	1.4	0.800	45.4	-	1.43806	124.4		
7	392	1.4	2.8	.821	40.9	40	1.44753	124.9		
8	437	3.3	6.1	.842	36.6	44	1.45213	128.4		
9	482	4.7	10.8	.861	32.8	48	1.46972	137.9		
10	527	6.1	16.9	.883	28.7	53	1.48129	141.0		

Stage 2—Distillation continued at 40 mm. Hg

11	392	4.9	21.8	0.905	24.2	60	1.49340	160.3	46	Below 5
12	437	8.8	30.6	.925	21.5	65	1.50422	167.6	61	do
13	482	10.2	40.8	.942	18.7	70		114	do	do
14	527	6.8	47.6	.956	16.5	74		280	do	do
15	572	8.4	56.0	.976	13.5	80		607	do	do
Residuum		43.4	99.4	1.014	8.0					

Carbon residue, Conradson: Residuum, 10.9 percent; crude, 5.0 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	-	-	-	-
Total gasoline and naphtha	2.8	0.811	43.1	-
Kerosine distillate	-	-	-	-
Gas oil	18.4	.875	30.2	-
Nonviscous lubricating distillate	12.0	.910-.938	23.9-19.4	50-100
Medium lubricating distillate	6.9	.938-.949	19.4-17.6	100-200
Viscous lubricating distillate	15.9	.949-.987	17.6-11.9	Above 200
Residuum	43.4	1.014	8.0	-
Distillation loss	0.6			

Bureau of Mines Bartlesville Laboratory Item 162
Sample 52030

San Joaquin field
Miocene and Oligocene

IDENTIFICATION

South America
Venezuela
Anzoategui

GENERAL CHARACTERISTICS

Gravity, specific 0.815 Gravity, ° API 42.1 Pour point, ° F. 75
Sulfur, percent, 0.14 Color, green
Viscosity, Saybolt Universal at 100°F., 36 sec. Nitrogen, percent, -

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure. 745 mm. Hg
First drop, 81 ° F.

Fraction No.	Cut temp., ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122	4.7	4.7	0.645	87.9					
2	167	4.3	9.0	.672	79.1	8.4	1.37697	126.4		
3	212	6.9	15.9	.723	64.2	23	1.40212	132.8		
4	257	9.7	25.6	.756	55.7	29	1.41949	141.0		
5	302	7.5	33.1	.778	50.4	32	1.43334	149.5		
6	347	4.7	37.8	.795	46.5	33	1.44236	153.5		
7	392	4.5	42.3	.802	44.9	31	1.44674	150.5		
8	437	4.4	46.7	.814	42.3	31	1.45291	151.7		
9	482	5.4	52.1	.830	39.0	33	1.46315	161.0		
10	527	6.4	58.4	.845	36.0	35	1.47294	170.5		

Stage 2—Distillation continued at 40 mm. Hg

11	392	4.8	63.3	0.853	34.4	35	1.47904	163.9	40	35
12	437	5.3	68.6	.853	34.4	31	1.48373	163.8	44	55
13	482	4.3	72.9	.856	33.8	29			52	75
14	527	5.6	78.5	.865	32.1	31			66	95
15	572	6.7	85.2	.868	31.5	29			-	115
Residuum		13.1	98.3	.954	16.8					

Carbon residue, Conradson: Residuum, 5.2 percent; crude, 0.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	15.9	0.686	74.8	-
Total gasoline and naphtha	42.3	0.743	58.9	-
Kerosine distillate	4.4	.814	42.3	-
Gas oil	23.0	.846	35.8	-
Nonviscous lubricating distillate	15.5	.855-.870	34.0-31.1	50-100
Medium lubricating distillate	-	-	-	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	13.1	.954	16.8	-
Distillation loss	1.7			

Bureau of Mines Bartlesville Laboratory
Sample 70026

Item 163

IDENTIFICATION

Santa Rosa field

South America
Venezuela

GENERAL CHARACTERISTICS

Gravity, specific, 0.836 Gravity, ° API, 37.8 Pour point, ° F., 70
Sulfur, percent, 0.09 Color, brownish green
Viscosity, Saybolt Universal at 77°F., 36 sec.; 100°F., 35 sec. Nitrogen, percent, 0.006

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 744 mm. Hg

First drop, 135 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	3.0	3.0	0.715	66.4	-	1.39908	140.2		
4	257	7.7	10.7	.766	53.2	34	1.42584	141.1		
5	302	8.7	19.4	.786	48.5	36	1.43428	144.5		
6	347	8.1	27.5	.801	45.2	36	1.42234	146.9		
7	392	6.5	34.0	.809	43.4	34	1.45263	159.8		
8	437	7.0	41.0	.823	40.4	35	1.46077	164.6		
9	482	8.6	49.6	.842	36.6	39	1.46693	166.0		
10	527	8.3	57.9	.853	34.4	39	1.47150	167.4		

Stage 2—Distillation continued at 40 mm. Hg

11	392	8.7	66.6	0.859	33.2	38	1.47493	169.6	40	45
12	437	7.5	74.1	.862	32.7	36	1.48187	174.4	46	55
13	482	6.3	80.4	.865	32.1	34	1.48492	181.7	55	75
14	527	7.3	87.7	.868	31.5	32			-	100
15	572	5.0	92.7	.872	30.8	31			-	120
Residuum		7.0	99.7	.928	21.0					

Carbon residue, Conradson: Residuum, 0.3 percent; crude, 0.02 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	3.0	0.715	66.4	
Total gasoline and naphtha	34.0	0.783	49.2	
Kerosene distillate	7.0	.823	40.4	
Gas oil	32.4	.854	34.3	
Nonviscous lubricating distillate	13.8	.863-.870	32.4-31.1	80-100
Medium lubricating distillate	5.5	.870-.874	31.1-30.5	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	7.0	.928	21.0	
Distillation loss	0.3			

Bureau of Mines Bartlesville Laboratory
Sample 69103

Item 164

IDENTIFICATION

Silvestre field
Eocene

South America
Venezuela
Barinas

GENERAL CHARACTERISTICS

Gravity, specific, 0.828 Gravity, ° API, 26.1 Pour point, ° F., below 5
Sulfur, percent, 1.17 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 102 sec.; 130°F., 77 sec. Nitrogen, percent, 0.261

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg

First drop, 77 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
1	122	1.2	1.2	0.652	85.5					
2	167	2.1	3.3	.678	77.2	11	1.37715	123.3		
3	212	2.9	6.2	.713	67.0	18	1.39743	124.8		
4	257	3.4	9.6	.737	60.5	20	1.41079	127.0		
5	302	4.3	13.9	.758	55.2	23	1.42093	136.1		
6	347	4.0	17.9	.781	49.7	27	1.43386	138.0		
7	392	3.9	21.8	.799	45.6	29	1.44327	143.9		
8	437	4.2	26.0	.817	41.7	32	1.45277	145.5		
9	482	4.6	30.6	.828	39.4	32	1.46070	152.2		
10	527	5.4	36.0	.843	36.4	34	1.46985	158.9		

Stage 2—Distillation continued at 40 mm. Hg

11	392	4.4	40.4	0.865	32.1	41	1.48009	167.5	41	5
12	437	5.5	45.9	.875	30.2	42	1.48509	168.9	48	25
13	482	5.3	51.2	.888	27.8	45	1.49374	172.3	63	50
14	527	5.0	56.2	.902	25.4	48			98	70
15	572	5.6	61.8	.913	23.5	50			175	90
Residuum		37.6	99.4	1.018	7.5					

Carbon residue, Conradson: Residuum, 12.5 percent; crude, 5.3 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	6.2	0.689	73.8	
Total gasoline and naphtha	21.8	0.747	58.0	
Kerosene distillate	4.2	.817	41.7	
Gas oil	17.8	.850	34.9	
Nonviscous lubricating distillate	10.0	.877-.902	29.9-25.3	80-100
Medium lubricating distillate	6.2	.902-.917	25.3-22.9	100-200
Viscous lubricating distillate	1.1	.917-.919	22.9-22.5	Above 200
Residuum	37.6	1.018	7.5	
Distillation loss	0.6			

Bureau of Mines Bartlesville Laboratory
Sample 69102

Item 165

Since field

IDENTIFICATION

South America
Venezuela
Barinas

GENERAL CHARACTERISTICS

Gravity, specific, 0.913 Gravity, ° API, 23.5 Pour point, ° F, 10
Sulfur, percent, 1.38 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 181 sec.; 130°F, 108 sec. Nitrogen, percent, 0.284

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 745 mm. Hg
First drop, 100 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum, percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
1.....	122									
2.....	167	1.7	1.7	0.667	80.6	-	1.37291	123.0		
3.....	212	2.0	3.7	.705	69.2	14	1.39351	126.4		
4.....	257	2.4	6.1	.734	61.3	19	1.40743	127.9		
5.....	302	3.5	9.6	.757	55.4	22	1.42061	130.7		
6.....	347	3.5	13.1	.780	49.9	26	1.43261	134.2		
7.....	392	3.7	16.8	.798	45.8	29	1.44265	143.6		
8.....	437	3.7	20.5	.815	42.1	31	1.45230	147.2		
9.....	482	4.8	25.3	.828	39.4	32	1.46171	152.2		
10.....	527	4.8	30.1	.846	35.8	36	1.47117	156.8		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum, percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
11.....	392	2.8	32.9	0.870	31.1	43	1.48090	161.2	42	10
12.....	437	4.6	37.5	.880	29.3	44	1.48535	161.9	47	25
13.....	482	6.7	44.2	.891	27.3	46	1.49407	165.7	64	50
14.....	527	6.4	50.6	.910	24.0	52			102	70
15.....	572	7.5	58.1	.919	22.5	53			215	95
Residuum		39.9	98.0	1.026	6.4					

Carbon residue, Conradson: Residuum, 13.2 percent; crude, 5.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	3.7	0.688	74.3	
Total gasoline and naphtha.....	16.8	0.732	56.6	
Kerosine distillate.....	3.7	.815	42.1	
Gas oil.....	15.7	.852	34.7	
Nonviscous lubricating distillate.....	9.9	.882-.906	28.9-24.6	50-100
Medium lubricating distillate.....	7.3	.906-.918	24.6-22.7	100-200
Viscous lubricating distillate.....	4.7	.918-.924	22.7-21.7	Above 200
Residuum.....	39.9	1.026	6.4	
Distillation loss.....	2.0			

Bureau of Mines Bartlesville Laboratory
Sample 57125

Item 166

Tia Juana field
Miocene

IDENTIFICATION

South America
Venezuela
Zulia

GENERAL CHARACTERISTICS

Gravity, specific, 0.893 Gravity, ° API, 27.0 Pour point, ° F, below 5
Sulfur, percent, 1.42 Color, brownish black
Viscosity, Saybolt Universal at 100°F, 148 sec.; 130°F, 115 sec. Nitrogen, percent, 0.206

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 742 mm. Hg
First drop, 127 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum, percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
1.....	122									
2.....	167									
3.....	212	3.3	3.3	0.707	68.6	-	1.39502	126.2		
4.....	257	3.3	6.6	.742	59.2	23	1.41344	130.8		
5.....	302	3.6	10.2	.763	54.0	25	1.42549	142.4		
6.....	347	3.4	13.6	.782	49.5	27	1.43556	140.7		
7.....	392	3.1	16.7	.797	46.0	28	1.44276	140.2		
8.....	437	3.8	20.5	.813	42.6	30	1.45075	140.8		
9.....	482	3.9	24.4	.831	38.8	33	1.46048	147.4		
10.....	527	5.4	29.8	.847	35.6	36	1.46877	159.9		

Stage 2—Distillation continued at 40 mm. Hg

Fraction No.	Cut temp. ° F.	Percent	Sum, percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. Visc. 100° F.	Cloud test, ° F.
11.....	392	2.5	32.3	0.858	33.4	37	1.47870	162.3	42	Below 5
12.....	437	4.7	37.0	.872	30.8	40	1.48243	164.3	46	16
13.....	482	5.9	42.9	.886	28.2	44	1.49013	-	59	46
14.....	527	5.1	48.0	.900	25.7	47			90	80
15.....	572	3.6	51.6	.910	24.0	49			150	90
Residuum		44.1	95.7	.986	12.0					

Carbon residue, Conradson: Residuum, 8.7 percent; crude, 4.2 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline.....	3.3	0.707	68.6	
Total gasoline and naphtha.....	16.7	0.758	55.2	
Kerosine distillate.....	3.8	.813	42.6	
Gas oil.....	15.9	.851	34.8	
Nonviscous lubricating distillate.....	9.9	.876-.902	30.0-25.4	50-100
Medium lubricating distillate.....	5.3	.902-.914	25.4-23.3	100-200
Viscous lubricating distillate.....				Above 200
Residuum.....	44.1	.986	12.0	
Distillation loss.....	4.3			

1/ Distillation discontinued at 559°F.

Bureau of Mines Bartlesville Laboratory
Sample 68073

Item 167

IDENTIFICATION

Tia Juana field
Miocene

South America
Venezuela
Zulia

GENERAL CHARACTERISTICS

Gravity, specific, 0.943 Gravity, ° API, 18.6 Pour point, ° F., 15
Sulfur, percent, 2.07 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 786 sec.; 130°F., 459 sec. Nitrogen, percent, 0.289

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 737 mm. Hg
First drop, 113 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212									
4	257	1.5	1.5	0.741	59.5	-	1.41297	132.4		
5	302	1.4	2.9	.761	54.4	24	1.42432	134.6		
6	347	1.7	4.6	.786	48.5	29	1.43465	137.6		
7	392	1.9	6.5	.801	45.2	30	1.44418	140.7		
8	437	3.1	9.6	.822	40.6	34	1.45490	142.3		
9	482	5.0	14.6	.845	36.0	40	1.46712	149.6		
10	527	5.7	20.3	.857	33.6	41	1.47592	158.4		

Stage 2—Distillation continued at 40 mm. Hg

11	392	1.5	21.8	0.880	29.3	48	1.48773	167.8	46	Below 5
12	437	4.6	26.4	.892	25.9	53	1.49475	173.4	54	do.
13	482	6.8	33.2	.910	24.0	55	1.50264	-	74	do.
14	527	6.0	39.2	.928	21.0	60	1.51445	-	160	do.
15	572	3.5	42.7	.932	20.3	59	-	-	255	do.
Residuum		55.5	98.2	1.001	9.9					

Carbon residue, Conradson: Residuum, 9.9 percent; crude, 5.8 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline				
Total gasoline and naphtha	6.5	0.775	51.2	
Kerosene distillate	3.1	.822	40.3	
Gas oil	13.0	.857	33.6	
Nonseparable lubricating distillate	9.1	.890-.915	27.6-23.1	50-100
Medium lubricating distillate	6.5	.915-.930	25.1-20.7	100-200
Viscous lubricating distillate	4.5	.930-.953	20.7-20.1	Above 200
Residuum	55.5	1.001	9.9	
Distillation loss	1.8			

1/ Distillation discontinued at 541°F.

Bureau of Mines Bartlesville Laboratory
Sample 70024

Item 168

IDENTIFICATION

Tia Juana field
Miocene

South America
Venezuela

GENERAL CHARACTERISTICS

Gravity, specific, 0.894 Gravity, ° API, 26.8 Pour point, ° F., below 5
Sulfur, percent, 1.54 Color, brownish black
Viscosity, Saybolt Universal at 100°F., 104 sec.; 130°F., 69 sec. Nitrogen, percent, 0.194

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

Stage 1—Distillation at atmospheric pressure, 735 mm. Hg
First drop, 79 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr. 60/60° F.	° API, 60° F.	C. I.	Refractive index, n _D at 20° C.	Specific dispersion	S. U. visc. 100° F.	Cloud test, ° F.
1	122									
2	167	2.9	2.9	0.664	81.6	-	1.40040	134.9		
3	212	2.6	5.5	.708	68.4	16	1.40787	136.4		
4	257	3.5	9.0	.738	60.2	21	1.41147	140.1		
5	302	3.5	12.5	.761	54.4	24	1.42432	140.8		
6	347	3.5	16.0	.781	49.7	27	1.43414	145.1		
7	392	3.2	19.2	.796	46.3	28	1.44165	145.2		
8	437	3.7	22.9	.811	43.0	29	1.44938	147.3		
9	482	4.4	27.3	.829	39.4	32	1.45859	148.2		
10	527	4.1	31.4	.850	35.0	38	1.46724	154.7		

Stage 2—Distillation continued at 40 mm. Hg

11	392	3.0	34.4	0.866	31.9	41	1.47732	157.0	40	Below 5
12	437	5.4	39.8	.877	29.8	43	1.48197	159.3	47	30
13	482	5.6	45.4	.883	27.8	45	1.48961	161.6	62	40
14	527	6.0	51.4	.899	25.9	47	-	-	103	60
15	572	7.3	58.7	.914	23.3	51	-	-	193	80
Residuum		39.9	98.6	.995	10.7					

Carbon residue, Conradson: Residuum, 11.5 percent; crude, 5.1 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	5.5	0.685	75.1	
Total gasoline and naphtha	9.2	0.744	58.6	
Kerosene distillate	3.7	.811	43.0	
Gas oil	15.3	.853	34.4	
Nonseparable lubricating distillate	9.8	.879-.899	29.4-25.0	50-100
Medium lubricating distillate	7.6	.899-.915	26.0-23.1	100-200
Viscous lubricating distillate	3.1	.915-.922	23.1-21.9	Above 200
Residuum	39.9	.995	10.7	
Distillation loss	1.4			

Bureau of Mines Bartlesville Laboratory
Sample 70030

Item 169

IDENTIFICATION

Zapatos field

South America
Venezuela

GENERAL CHARACTERISTICS

Gravity, specific, ... 0.882 Gravity, ° API, ... 28.9 Pour point, ° F., ... 75
Sulfur, percent, ... 0.48 Color, ... greenish black
Viscosity, Saybolt Universal at 77°F., 281 sec.; 100°F., 56 sec. Nitrogen, percent, ... 0.075

DISTILLATION, BUREAU OF MINES ROUTINE METHOD

STAGE 1—Distillation at atmospheric pressure, ... 747 mm. Hg
First drop, ... 111 ° F.

Fraction No.	Cut temp. ° F.	Percent	Sum. percent	Sp. gr., 60/60° F.	° API, 60° F.	C. I.	Refractive index, n_D at 20° C.	Specific dispersion	S. U. visc., 100° F.	Cloud test, ° F.
1	122									
2	167									
3	212	3.1	3.1	0.709	68.1	-	1.41376	155.0		
4	257	4.0	7.1	.763	54.0	33	1.42893	160.9		
5	302	4.0	11.1	.786	48.5	36	1.43592	161.1		
6	347	3.0	14.1	.798	45.8	35	1.44687	161.6		
7	392	3.5	17.6	.804	44.5	31	1.49973	161.8		
8	437	3.4	21.0	.818	41.5	32	1.45706	162.0		
9	482	5.2	26.2	.838	37.4	37	1.46848	163.0		
10	527	4.4	30.6	.852	34.6	39	1.47659	163.8		

STAGE 2—Distillation continued at 40 mm. Hg

11	392	4.0	34.6	0.878	29.7	47	1.48063	164.2	39	Below 5
12	437	7.9	42.5	.883	28.7	45	1.48525	165.0	47	40
13	482	6.0	48.5	.889	27.7	45	1.49204	166.2	60	50
14	527	9.3	57.8	.892	27.1	43			95	75
15	572	8.0	65.8	.895	26.6	42			-	115
Residuum		34.0	99.8	.944	18.4					

Carbon residue, Conradson: Residuum, ... 4.3 percent; crude, ... 1.6 percent.

APPROXIMATE SUMMARY

	Percent	Sp. gr.	° API	Viscosity
Light gasoline	3.1	0.709	68.1	
Total gasoline and naphtha	17.6	0.773	51.6	
Kerosine distillate	3.4	.818	41.5	
Gas oil	19.2	.862	32.3	
Nonviscous lubricating distillate	13.7	.884-.892	28.5-27.1	50-100
Medium lubricating distillate	11.9	.892-.896	27.1-26.4	100-200
Viscous lubricating distillate	-	-	-	Above 200
Residuum	34.0	.944	18.4	
Distillation loss	0.2			

BIBLIOGRAPHY

1. Armstrong, T. A. Structure Isn't the Answer in Queensland. *Oil and Gas J.*, v. 63, No. 26, June 28, 1965, pp. 126-128.
2. Bell, E. A. Yugoslav Five Year Plan. *World Petrol.*, v. 19, No. 11, October 1948, pp. 56-57.
3. Blade, O. C. Bibliography of Reports Containing Analyses of Crude Oils by the Bureau of Mines Routine Method. *BuMines Inf. Circ.* 7921, 1959, 181 pp.
4. Borger, H. D., and E. F. Lenert. The Geology and Development of the Bolivar Coastal Field at Maracaibo, Venezuela. *Proc. Fifth World Petrol. Cong.*, sec. 1, 1959, pp. 481-498.
5. Bowerman, J. N. Petroleum Developments in North Africa in 1965. *Bull. Am. Assoc. Petrol. Geol.*, v. 50, No. 8, August 1966, pp. 1681-1703.
6. _____. Petroleum Developments in North Africa in 1966. *Bull. Am. Assoc. Petrol. Geol.*, v. 51, No. 8, August 1967, pp. 1564-1586.
7. Canada. Dept. of Mines, Mineral Information Bulletin MR 78, 1965, p. 10.
8. Chantler, H. McD., and P. B. Seely. Analyses of Canadian Crude Oils (Samples Received in 1954). *Canada. Dept. Mines and Tech. Surveys*, No. F.R.L. 206, December 1955, 26 pp.
9. Chantler, H. McD., P. B. Seely, and F. E. Goodspeed. Analyses of Canadian Crude Oils. *Canada. Dept. Mines and Tech. Surveys*, No. 832, 1951, 90 pp.
10. Cordry, Eugene A. Petroleum Developments in Central and Southern Africa in 1966. *Bull. Am. Assoc. Petrol. Geol.*, v. 51, No. 8, August 1967, pp. 1587-1625.
11. de Lavilleon, Patrick, and Michael J. Wells. Gamba Field Pushes Expansion in Gabon. *World Petrol.*, v. 39, No. 2, February 1968, pp. 32-35.
12. Dunston, A. E. (ed.). *Crude Oil. Part 1 in The Science of Petroleum.* Oxford University Press, New York, v. 5, 1950, p. 21.
13. Ferrero, E. P., and Dorothy T. Nichols. Analyses of 38 Crude Oils From Africa. *BuMines Inf. Circ.* 8293, 1966, 47 pp.
14. Funkhouser, H. J., L. C. Sass, and H. D. Hedberg. Santa Ava, San Joaquin, Guario and Santa Rosa Oil Fields (Avaco Fields), Central Anzoategui, Venezuela. *Bull. Am. Assoc. Petrol. Geol.*, v. 32, No. 10, October 1948, pp. 1851-1908.

15. Galloway, J. O. Petroleum Developments in Western Canada in 1950. Bull. Am. Assoc. Petrol. Geol., v. 35, No. 6, June 1951, pp. 1388-1403.
16. Heater, W. E. Petroleum Developments in the Middle East and Adjacent Countries in 1953. Bull. Am. Assoc. Petrol. Geol., v. 38, No. 7, July 1954, pp. 1504-1525.
17. Heatzig, Grant, and Roland Michel. Petroleum Developments in North Africa in 1967. Bull. Am. Assoc. Petrol. Geol., v. 52, No. 8, August 1968, pp. 1489-1511.
18. _____. Petroleum Developments in North Africa in 1968. Bull. Am. Assoc. Petrol. Geol., v. 52, No. 8, August 1969, pp. 1700-1727.
19. Hedberg, Hollis D. Petroleum Developments in Africa in 1956. Bull. Am. Assoc. Petrol. Geol., v. 41, No. 7, July 1957, pp. 1540-1590.
20. _____. Petroleum Developments in Africa in 1960. Bull. Am. Assoc. Petrol. Geol., v. 45, No. 7, July 1961, pp. 1143-1185.
21. Hotchkiss, Henry. Petroleum Developments in Middle East and Adjacent Countries in 1956. Bull. Am. Assoc. Petrol. Geol., v. 41, No. 7, July 1957, pp. 1591-1632.
22. _____. Petroleum Developments in Middle East and Adjacent Countries in 1957. Bull. Am. Assoc. Petrol. Geol., v. 42, No. 7, July 1958, pp. 1680-1708.
23. _____. Petroleum Developments in Middle East and Adjacent Countries in 1961. Bull. Am. Assoc. Petrol. Geol., v. 46, No. 7, July 1962, pp. 1241-1280.
24. _____. Petroleum Developments in Middle East and Adjacent Countries in 1963. Bull. Am. Assoc. Petrol. Geol., v. 48, No. 8, August 1964, pp. 1345-1386.
25. Internat. Oil Scouts Assoc. International Oil and Gas Development. Pt. 2. Production United States and Canada. Austin, Tex., v. 33, 1963, pp. 519-541.
26. _____. International Oil and Gas Development. Pt. 2. Production United States and Canada. Austin, Tex., v. 34, 1964, pp. 701-730.
27. _____. International Oil and Gas Development. Pt. 2. Production United States and Canada. Austin, Tex., v. 35, 1965, pp. 648-664.
28. _____. International Oil and Gas Development. Pt. 2. Production United States and Canada. Austin, Tex., v. 36, 1966, pp. 633-669.
29. _____. International Oil and Gas Development. Pt. 2. Production United States and Canada. Austin, Tex., v. 37, 1967, pp. 721-750.

30. _____. International Oil and Gas Development. Pt. 2. Production United States and Canada. Austin, Tex., v. 38, 1968, pp. 737-767.
31. _____. International Oil and Gas Development. Pt. 2. Production United States and Canada. Austin, Tex., v. 40, 1970, pp. 827-863.
32. Jocquel, E. J. Engineering the Hassi Messaoud Field. Petrol. Eng., v. 33, No. 10, September 1961, pp. 77-86.
33. Kerr, Richard C., and John O. Nigra. Petroleum Developments in Middle East and Adjacent Countries in 1951. Bull. Am. Assoc. Petrol. Geol., v. 36, No. 7, July 1952, pp. 1427-1444.
34. King, R. E. Petroleum Developments in Europe in 1957. Bull. Am. Assoc. Petrol. Geol., v. 42, No. 7, July 1958, pp. 1589-1630.
35. Logan, L. J. Australia Is Made Active by Widespread Discoveries. World Oil, v. 161, No. 3, Aug. 15, 1965, pp. 72-75.
36. Mason, John F., and Quentin M. Moore. Petroleum Developments in Middle East Countries in 1969. Bull. Am. Assoc. Petrol. Geol., v. 54, No. 8, August 1970, pp. 1524-1547.
37. _____. Petroleum Developments in Middle East Countries in 1968. Bull. Am. Assoc. Petrol. Geol., v. 53, No. 8, August 1969, pp. 1764-1788.
38. McKinney, C. M., and E. L. Garton. Analyses of Crude Oil From 470 Important Oilfields in the United States. BuMines Rept. of Inv. 5376, 1957, 276 pp.
39. _____. Analyses of 42 Crude Oils From Mexico. BuMines Rept. of Inv. 5595, 1960, 26 pp.
40. Mencher, E., H. J. Fichter, H. H. Renz, W. E. Walls, J. M. Patterson, and R. H. Robie. Geology of Venezuela and Its Oilfields. Bull. Am. Assoc. Petrol. Geol., v. 37, No. 4, April 1953, pp. 690-777.
41. Moody, J. D., and M. C. Parsons. Petroleum Developments in Africa in 1963. Bull. Am. Assoc. Petrol. Geol., v. 48, No. 10, October 1964, pp. 1622-1665.
42. Oil and Gas J. V. 59, No. 52, Dec. 25, 1961, pp. 106-154.
43. _____. V. 60, No. 53, Dec. 31, 1962, pp. 88-136.
44. _____. V. 61, No. 52, Dec. 30, 1963, pp. 104-152.
45. _____. V. 62, No. 52, Dec. 28, 1964, pp. 109-151.
46. _____. V. 63, No. 1, Jan. 4, 1965, p. 149.

47. Oil and Gas J. V. 63, No. 52, Dec. 27, 1965, pp. 85-128.
48. _____. V. 64, No. 52, Dec. 26, 1966, pp. 114-126.
49. _____. V. 65, No. 52, Dec. 25, 1967, pp. 123-136.
50. _____. V. 66, No. 53, Dec. 30, 1968, pp. 109-122.
51. _____. V. 67, No. 52, Dec. 29, 1969, pp. 99-113.
52. _____. V. 68, No. 52, Dec. 28, 1970, pp. 112-132.
53. Petrol. Eng. Nigeria: Global Oil Hotspot. V. 38, No. 6, June 1966, pp. 58-63.
54. Porterfield, D. C. Petroleum Developments in Venezuela in 1940. Trans. AIME, v. 142, 1941, pp. 560-565.
55. Rousseau, R. J. Production Operations in Algeria's Hassi Messaoud Field. World Oil, v. 152, No. 2, Feb. 1, 1961, pp. 23-26.
56. Sass, Louis C., and C. H. Neff. Review of 1965 Petroleum Developments in South America and Caribbean Area. Bull. Am. Assoc. Petrol. Geol., v. 50, No. 8, August 1966, pp. 1564-1624.
57. Schuppli, H. The East Indian Archipelago. Ch. in The Science of Petroleum, ed. by A. E. Dunston. Oxford University Press, New York, v. 1, 1938, pp. 131-132.
58. Seely, D. B., R. G. Draper, and H. McD. Chantler. Analyses of Canadian Crude Oils (Samples Received in 1955 and 1956). Canada. Dept. of Mines and Tech. Surveys, No. F.R.L. 256, June 1957, 36 pp.
59. Smith, H. M. Composition of United States Crude Oils. Ind. and Eng. Chem., v. 44, November 1952, pp. 2577-2585.
60. _____. Correlation Index To Aid in Interpreting Crude Oil Analyses. BuMines Tech. Paper 610, 1940, 34 pp.
61. Smith, H. M., and J. H. Hale. Crude Oil Characterizations Based on Bureau of Mines Routine Analyses. BuMines Rept. of Inv. 6846, 1966, 28 pp.
62. Smith, N.A.C., H. M. Smith, O. C. Blade, and E. L. Garton. The Bureau of Mines Routine Method for the Analysis of Crude Petroleum. I. The Analytical Method. BuMines Bull. 490, 1951, 82 pp.
63. Smith, N.A.C., H. M. Smith, and C. M. McKinney. Refining Properties of New Crudes. Petrol. Processing, v. 5, No. 6, June 1950, pp. 609-614.

64. Sutton, Anne Newman. Venezuela Production at New High. World Petrol., v. 20, No. 1, January 1949, pp. 36-41.
65. Todd, M. B. Wide-Spaced Waterflood Pays Off for Marathon. World Oil, v. 161, No. 1, July 1965, pp. 90-94.
66. Vuckovic, J., R. Filjals, and V. Aksia. Survey of Exploration and Production of Oil in Yugoslavia. Proc. Fifth World Petrol. Cong., sec. 1, 1959, pp. 1003-1021.
67. Wade, A. Recent Advances, Political and Geological, in Connection With the Search for Oil in Australia. Proc. Second World Petrol. Cong., sec. 1, 1937, pp. 327-332.
68. Weeks, L. G. Development in Foreign Fields in 1948. Bull. Am. Assoc. Petrol. Geol., v. 33, No. 6, June 1949, pp. 1024-1124.
69. World Petrol. Reports, v. 16, 1970, p. 83.

NTIS does not permit return of items for credit or refund. A replacement will be provided if an error is made in filling your order, if the item was received in damaged condition, or if the item is defective.

Reproduced by NTIS
National Technical Information Service
U.S. Department of Commerce
Springfield, VA 22161

This report was printed specifically for your order from our collection of more than 2 million technical reports.

For economy and efficiency, NTIS does not maintain stock of its vast collection of technical reports. Rather, most documents are printed for each order. Your copy is the best possible reproduction available from our master archive. If you have any questions concerning this document or any order you placed with NTIS, please call our Customer Services Department at (703)487-4660.

Always think of NTIS when you want:

- Access to the technical, scientific, and engineering results generated by the ongoing multibillion dollar R&D program of the U.S. Government.
- R&D results from Japan, West Germany, Great Britain, and some 20 other countries, most of it reported in English.

NTIS also operates two centers that can provide you with valuable information:

- The Federal Computer Products Center - offers software and datafiles produced by Federal agencies.
- The Center for the Utilization of Federal Technology - gives you access to the best of Federal technologies and laboratory resources.

For more information about NTIS, send for our *FREE NTIS Products and Services Catalog* which describes how you can access this U.S. and foreign Government technology. Call (703)487-4650 or send this sheet to NTIS, U.S. Department of Commerce, Springfield, VA 22161. Ask for catalog, PR-827.

Name _____
Address _____

Telephone _____

*- Your Source to U.S. and Foreign Government
Research and Technology.*



U.S. DEPARTMENT OF COMMERCE
Technology Administration
National Technical Information Service
Springfield, VA 22161 (703) 487-4650
