AN OUTLINE OF THE MAIN MINERAL RESOURCES OF GHANA*

Joseph A. Gaze**

INTRODUCTION

With an area of 239,460 sq km, and a rather complex physiographical and geological features, the Republic of Ghana, formerly known as the Gold Coast, is endowed with a vast range of mineral resources. Consequently, mining and mineral extraction had been quite indigenous to the country, and the winning of precious minerals such as gold and diamonds, through indigenous methods, dates as far back as the 6th century and probably beyond.

However, the first mine was opened by the Portuguese as late as 1482, and a well organized Geological Survey Department was not formed until 1913. Since then the mining and mineral processing industry in Ghana has gone through many phases. Presently, the only minerals being exploited are gold, manganese, bauxite, diamond, kaolin and limestone, and minerals account for only about 25% of the country's total export values. However, the existence of large reserves of proven ore deposits of various other economic minerals such as iron ore, clay and dolomite, appreciable quantities of probable ore deposits of such minerals as barite, potash feldspar, and andalusite, and potential ore deposits of silicates, road building materials, common salt and petroleum cannot be over-emphasized.

MAIN MINERAL DEPOSITS

The main mineral deposits of Ghana can be categorized into Metallic and Non-metallic Minerals. Below is a detailed discussion of the minerals and their deposits according to the above categories and in alphabetical order.

METALLIC MINERALS

ALUMINIUM

Ghana does not as a nation produce aluminium from her bauxite resources. The bauxite produced in the country at Awaso is exported after the silica has been washed out of the raw ore, to Burntisland, Scotland, for refining to alumina and finally into aluminium related products such as toothpaste manufacture and aluminium salts, particularly sulphates for use as flocculant in water treatment.

However, the Volta Aluminium Company Limited (VALCO) owned by Kaiser Aluminium and Chemical Corporation (90%) and Reynolds Metals Company (10%), both of the U.S.A., has a 200,000 tonnes per year aluminium smelter at Tema where alumina, imported from Jamaica, is smelted and processed into primary and alloyed aluminium ingots and exported. This aluminium plant at Tema is the largest producer of primary aluminium in Africa and one of the largest private enterprises in Ghana. Table 1 shows Valco's aluminium production for the past 15 years i.e. 1969-1983.

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** Industrial Research Inst., Accra, Ghana (現京都大学研究留学生) (Western Cashngs Limited, Ghana.)

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Table 1. Valco's yearly aluminium production from 1969–1983. (Source: Mining Annual Review and Valco's Annual Reports).

Year	Production of Aluminium (in tonnes)
1969	111 200
1970	113 000
1971	111 100
1972	133 000
1973	152 000
1974	157 000
1975	143 000
1976	151 000
1977	153 468
1978	113 462
1979	168 729
1980	191 195
1981	190 497
1982	174 246
1983	42 453

The low production in 1978 was due to a general power failure in Ghana in May, 1978 causing the closure of about 60% plant capacity at Valco. In 1983, although Valco began the year with three of its five potlines in operation, by year-end, the plant was entirely shut down due to the disastrously low inflow of water into the Volta Lake thus creating an energy crisis in Ghana and hence the low aluminium production for the year 1983.

BAUXITE

Ghana is one of the West African countries which is rich in bauxite deposits. The bauxite deposits could be classified as lateritic-silicate types, with the main minerals being gibbsite, and small amounts of boehmite kaolinite and iron minerals.

The main occurrences of bauxite in Ghana are at Sefwi-Bekwai in the Western Region, Aya-Nyinahin in the Ashanti Region, Atewa Range near Kibi and at Mt. Ejuanema both in the Eastern Region. Their locations are shown in Fig. 1.

The approximate reserves of the deposits are as follows:

Sefwi-Bekwai	19,000,000 tonnes
Aya-Nyinahin group	350,000,000 tonnes
Kibi	150,000,000 to 180,000,000 tonnes
Mt. Ejuanema	5,100,000 tonnes

Even though the chemical composition of the various deposits vary considerably, they are generally similar to the following chemical analysis obtained from Mt. Supirri, the largest hill in the Affo group of hills of the Sefwi-Bekwai deposits. (Table 2.)

At present, only the deposits at Sefwi-Bekwai (popularly known as the Awaso deposits) are being exploited, however, of the four deposits, only the Kibi and Aya-Nyinahin deposits are of such sizes as to warrant long term industrial investment. The production figures over the last 30 years of Ghana Bauxite Company, the only company exploiting and exporting bauxite in Ghana at the moment is shown in Table 3.

GOLD

The name Ghana, formerly the Gold Coast, has been associated with gold from time immemorial,

1. <i>Nyinakin group</i> ;	2. <i>Kibi group</i> ;	3. <i>Awaso group</i> ;
4. <i>Mt. Ejuanema group</i> ;	5. Mt. Kwamisa deposit;	6. Mt. Odumparara deposit;
7. Mt. Nkwanta deposit;	8. Mt. Kawkawti deposit;	9. Mt. Kwantama deposit;
10. Asempanaye group;	11. Awuakrom deposit;	12. Edubia deposit;
13. Mpuasu Hill deposit.		

Fig. 1 The bauxite deposits of Ghana. (The four main deposits are in *italics*)

for gold was found in such common use among the people of Ghana by the European sailors and merchant adventurers of the 15th and 16th centuries that, they described the country as the Gold Coast.

Table 2. The result of the chemical analysis of bauxite from Mt. Supirri, Sefwi-Bekwai.

	Sample numbers							
	7677	7684	7705-14	9250-	9256-60	9261-3	9909-19	9278-93
SiO ₂	1,94	0,37	0,82	0,44	0,64	0,62	2,40	0,45
Al ₂ O ₃	18,86	59,69	57,51	57,47	60,68	61,08	52,61	52,07
Fe ₂ O ₃	61,12	6,01	8,70	9,75	4,20	4,10	14,14	16,40
TiO ₂	0,24	0,75	1,50	1,00	1,11	0,87	1,31	1,58
H ₂ O+.....	17,71	33,22	31,08	30,18	32,17	32,32	28,23	27,80
H ₂ O-.....	—	—	—	1,02	0,76	1,05	1,22	0,92
CaO	—	—	—	0,18	0,33	0,25	0,30	0,16
MgO	—	—	—	—	—	—	—	0,03
V ₂ O ₃	—	—	—	0,04	0,03	0,02	0,05	0,04

Table 3. Bauxite production over the last 30 years by Ghana Bauxite Company (Source: Annual reports of Ghana Chamber of Mines and Ghana Bauxite Co. Limited).

Year	Ore (in tonnes)		
	Produced	Railed	Shipped
1954-55	167 966	179 155	178 756
1955-56	139 166	100 407	83 691
1956-57	182 598	165 810	154 358
1957-58	180 480	198 418	207 901
1958-59	186 879	210 653	169 321
1959-60	197 938	170 814	161 619
1960-61	213 767	232 613	232 659
1961-62	207 929	225 219	216 887
1962-63	225 955	281 038	272 075
1963-64	271 025	257 455	221 231
1964-65	278 589	280 096	277 066
1965-66	312 508	270 786	274 441
1966-67	333 458	347 651	314 391
1967-68	317 171	305 365	335 844
1968-69	247 999	244 826	240 502
1969-70	259 993	314 624	290 164
1970-71	361 038	328 594	347 522
1971-72	356 479	359 104	313 623
1972-73	330 351	328 225	319 475
1973-74	327 627	338 793	355 283
1974-75	383 087	374 463	398 499
1975-76	282 084	259 158	322 327
1976-77	271 090	276 088	249 849
1977-78	271 448	280 592	251 588
1978	329 856	301 403	340 575
1979	213 679	236 660	250 585
1980	224 501	187 423	196 892
1981	179 598	173 159	156 769
1982	63 530	103 422	92 954
1983	70 235	57 186	82 310

There is a wide spread occurrence of gold in Ghana. The three main types of auriferous deposits are;

1. the reef, vein or lode-type gold deposits
2. auriferous quartz-pebble conglomerates
3. recent alluvial and eluvial deposits

The auriferous quartz veins or reefs associated with sulphide minerals are so far the deposits yielding the country's largest amounts of gold. Values in the reefs are high but patchy and may range from nil to an average of 34 gm/tonne. Values between 170 gm/tonne and 850 gm/tonne are not uncommon in rich areas such as Obuasi and Konogo, but such lodes are of limited extent.

At present, there are five producing gold mines in Ghana. These are, the Ashanti Goldfields Corporation (Ghana) Limited at Obuasi, the State Gold Mining Corporation mines which comprises, Tarkwa Goldfields Limited, Prestea Goldfields Limited, both in the Western Region, Konogo Goldfields Limited in the Ashanti Region, and Dunkwa Goldfields Limited in the Central Region.

LEGEND

⚡ Deep mining. ⚙ Surface mining. (Dredging)

Fig. 2 Locations of the 5 gold mines in Ghana

The locations of these mines are shown in Fig. 2.

Ashanti Goldfields Corporation (Ghana) Limited, the biggest mine, has a mineral concession area of 259 sq km and mostly treating sulphide ores averaging 10.5 dwt/ton, have from 1897 to 1983 produced 17,265,762 fine ounces of gold. Their ore reserves position as at 1981/82 stood at 5,557,097 tonnes with an average grade of 12.5 dwt/ton.

Tarkwa Goldfield Limited property covers an area of approximately 280 sq km. The gold of this mine usually occur in the conglomerates of the basket series, which are composed of quartz-pebbles and are nearly always barren. From 1969 to 1983 it has produced a total of 684,702 fine ounces of gold, and its proven ore reserve position as at 1980/81 was 1,743,035 tonnes with an average grade of 5.6 dwt/ton.

Prestea Goldfields Limited, treating both sulphide ores and quartz conglomerates, for a period of 14 years (1969–1983) produced a total of 1,159,147 fine ounces of gold. Its proven ore reserve position as at 1980/81 stood at 1,914,654 tonnes, averaging 4.91 dwt/ton.

Konongo Goldfields Limited has a mineral concession area of about 52 sq km and its production in 14 years (1969–1983) amounted to 76,486 fine ounces of gold. Its ore reserves at 1977/78 was

Table. 4 Ghana's percentage annual production of gold as compared to the total estimated world production since 1960.

Year	World production (in fine ounces)	Ghana's production (in fine ounces)	Percentage of world production
1960	37 809 000	915 317	2,42
1961	39 294 000	878 459	2,24
1962	41 600 000	823 115	1,98
1963	43 147 000	911 663	2,11
1964	44 841 000	912 592	2,04
1965	46 225 000	851 090	1,84
1966	46 580 000	708 906	1,52
1967	45 737 000	724 134	1,58
1988	46 165 000	575 346	1,25
1969	46 612 000	750 435	1,61
1970	47 522 000	714 442	1,50
1971	46 495 000	693 770	1,49
1972	44 843 000	710 013	1,58
1973	42 997 000	731 711	1,70
1974	40 124 000	709 550	1,77
1975	38 675 000	583 103	1,51
1976	39 883 000	515 654	1,29
1977	30 538 900	531 084	1,74
1978	30 806 000	465 651	1,51
1979	30 243 500	387 730	1,28
1980	—	349 870	—

72,810 tonnes with an average grade of 6.39 dwt/ton.

Dunkwa Goldfields Limited, the only gold concession in Ghana where gold is recovered from river gravels by the dredge mining method, has a concession area covering 1.6 km on either side of the Ofin River, and about 60 km upstream. Its total gold production from 1971 to 1983 was 116,186 fine ounces of gold, and as at 1980/81., its ore reserves position was 386,956,169 cubic yards.

Table 4 shows Ghana's percentage annual production of gold as compared to the total estimated world production since 1960.

Aside these five operating mines and their concessions, there are many more auriferous horizons in Ghana and there are several mines which have been closed down or abandoned due to reasons which are no longer valid. When categorized under the three fold classifications of mine, prospect, and showings, there could easily be identified in Ghana about 20 mines, about 50 prospects (lode, banket and alluvial), and over 400 showings.

IRON

There are three main iron ore deposits of potential industrial or commercial importance in Ghana. These are 1. the Shieni sedimentary iron ore, 2. the Opon-Mansi lateritic ore and 3. the Pudo titaniferousmagnetiferous iron ore. Fig. 3 shows the locations of both the major and minor iron ore deposits of Ghana.

The Shieni deposits entirely located in the Northern Region of the country and is composed mainly of hematites and hydrohematite, has an estimated reserve of 270 million tonnes of iron ore with more than 45% iron and less than 30% silica. At the southern portion of the deposit, where the quality of ore is lower, a rough estimate puts the reserves at about 400 million tonnes. In addition,

Fig. 3 Iron ore deposits of Ghana.

Table 5. The result of chemical analysis of samples of Opon-Mansi iron ore.

Chemical composition	Mean %	Range %
SiO ₂	3, 32	1, 24 — 12, 04
Al ₂ O ₃	6, 43	3, 05 — 10, 76
Fe ₂ O ₃	75, 14	61, 44 — 80, 22
FeO	0, 64	0, 13 — 0, 97
CaO	0, 17	0, 13 — 0, 20
MgO	0, 31	0, 23 — 0, 40
Na ₂ O	0, 01	10, 01 — 0, 07
K ₂ O	0, 02	10, 01 — 0, 06
TiO ₂	1, 04	0, 55 — 1, 98
MnO	0, 05	0, 01 — 0, 29
P ₂ O ₅	0, 99	0, 59 — 1, 39
H ₂ O+105°C.	10, 43	6, 97 — 11, 06
H ₂ O-105°C.	1, 40	0, 98 — 2, 14

the Kubalem ore field which displays great differences in iron and silica contents, but generally averaging 41.6% Fe and 29.6% SiO₂, consists of about 600 million tonnes of low grade iron ore. The total estimated reserves of iron ore at the Shieni hills are put at 1270 million tonnes.

The Opon-Mansi iron ore deposit has about 150 million tonnes of iron ore indicated in an area of 4,050,000 square metres. Out of this, 55 million tonnes have been proven by analysis and the average iron content of this ore was found to be 52.5%. The ore which is mostly hematite and hydrohematite, have small amounts of aluminium and titanium minerals included. The results of chemical analysis of samples of Opon-Mansi ore is shown in Table 5.

The Pudo ore which is largely magnetite generally has more than 75% Fe_2O_3 and between 9 and 11% TiO_2 . The total inferred ore reserves at the pudo area is shown as follows:

North of Pudo ...	3,514,300 tonnes
South of Pudo ...	1,001,300 tonnes
	4,515,600 tonnes

MANGANESE

The name of Ghana has been associated with high grade manganese since 1916 and it has been difficult for any country to break Ghana's record in the production of this ore during the past 60 years. It has been estimated that over 27 million tonnes of high grade ore have been produced and exported from Ghana. The source of this ore is the Nsuta mines in the Western Region, which has since had its name recorded in geological literature, as the better-grade ore mineral 'Nsutite' is named after it.

The Nsuta-Dagwin manganese deposits are the most important manganese deposits known in Ghana. Exploitation of these deposits began in 1916 and by 1917 shipment of an amount of 20,600 tonnes of ore with a composition of 52.0% Mn, 4.6% Fe, 4.0% SiO_2 , and 0.11% P had been effected. In February, 1923, the African Manganese Company Limited, was formed to operate the mine. The

Table 6. Details of ore reserves at Nsuta as calculated by the Geological Survey Department in 1964.

Ore type	Ore reserves (tonnes)	% Chemical composition			
		Mn	SiO_2	P	Fe
1. <u>Oxide ore—high grade</u>					
Total	5 038 000	48,9	—	—	—
52% Mn	1 666 800	53,6	—	—	—
48 to 52% Mn	1 228 400	49,9	—	—	—
40 to 48% Mn	2 142 800	44,7	—	—	—
2. <u>Oxide ore—low grade</u>	2 013 200	34,3	—	—	—
3. <u>Detrital ore—(Nsuta)</u>					
Total	689 700	36,3	—	—	—
40% Mn	239 400	44,5	—	—	—
30 to 40% Mn	367 000	36,0	—	—	—
20 to 30% Mn	183 300	27,1	—	—	—
4. <u>Detrital ore (N.E. of Nsuta)</u>	1 532 700	26,0	—	—	11,0
5. <u>Carbonate ore—high grade</u>					
25%—Mn; 15% SiO_2	16 943 300	31,2	11,4	0,06	—
6. <u>Carbonate ore—low grade</u>					
15 to 20%—Mn; 15%— SiO_2	11 072 100	20,3	21,4	0,07	—
7. <u>Slime from washing plant</u>	80 000	13,1	—	—	4,7

rate of production at the time was about 32,500 tonnes monthly and this made the mine the most productive single manganese mine in the world. By the end of 1924, a total of 605,536 tonnes of ore had been exported.

The Nsuta manganese ores are chemically of two main types. These are the oxide and the carbonate types. The chief minerals of the oxide type are pyrolusite and psilomelane. The carbonate rocks are mainly rhodochrosite or dialogite and everywhere they underlie the oxide ore body. The carbonates contain varying amounts of silica and alumina. The average manganese present in eight carbonate rock samples was 34.16%.

It is known that there are about 28 million tonnes of manganese carbonate ore at Nsuta. A break down of the ore reserve figures as calculated by the Geological Survey Department is given in Table 6.

NON-METALLIC MINERALS

The non-metallic minerals that occur in commercial quantities and are of economic importance in Ghana include Diamonds, Kaolin and Limestone. These minerals are briefly discussed below.

DIAMOND

The mining of diamonds is one of Ghana's leading industries. This industry started in early 1920 when the Akim Diamondfields Limited started to work deposits at Abomosu. The Consolidated African Selection Trust opened up the very rich deposits at Akwatia in 1923 and 1925, and the West African Diamond Syndicate started operations at Kokotintin in the Eastern Region. At present, diamonds are mined in Ghana by 1. Ghana Consolidated Diamonds (GCD) Limited, 2. Cayco (Ghana) Limited, 3. Amalgamated Mining Company, 4. Dunkwa Goldfields Limited of the State Gold Mining Corporation and 5. Private diamond winners.

Ghana Consolidated Diamonds (GCD) Limited is the chief producer of diamonds in Ghana accounting for over 90% of all the diamonds produced in the country since 1923 to present. They have a concession area of up to 152.2 sq km and has produced not less than 70 million carats of diamonds from 29 million cubic metres of gravels, treated at a grade of 2.44 carats per cubic metre. The other companies have concession areas as follows:

Cayco (Ghana) Limited	5.74 sq km
Diamond Winners and Amalgamated Company Ltd.	4.0 sq km
Ex-Akim Concessions	48.1 sq km
Ghana Mineral Trading Corporation	25.8 sq km

All together these companies in addition to private winners produced a total of 6,616,039 carats of diamond between the period 1977/78 to 1981/82.

The principal diamondiferous areas as shown in Fig. 4 include, the Birim diamondfield, the Bansa diamondfield, the Dunkwa/Jimi field and the Nyafomang field. The diamonds in these fields are normally associated with such heavy minerals as staurolite, ilmenite, rutile, and tourmaline. The main concentrations of the diamonds occur in the shallow tributary valleys and associated inter-fluvial deposits in the Akwatia area, but many other tributaries and terraces of the Birim River also contain workable deposits. It is estimated that the Birim flats still hold more than 50 million carats of diamonds. Proved blocks within the existing Akwatia mining area has presently a total ore reserves of 2,590,000 cubic metres, estimated to be containing about 3,740,000 carats of diamonds.

LEGEND

- Isolated diamond
- 1 Birim diamondfield
- 2 Bonsa diamondfield
- 3 Dunkwa/Jimi diamondfield
- 4 Nyafomang diamondfield

Fig. 4 Locations of diamondiferous areas in Ghana.

The middle Birim ore reserves position presently is 7,360,700 cubic metres of full gravel horizon capable of producing about 9,446,000 carats of diamonds.

KAOLIN

The best known kaolin deposits in Ghana are those found at the Abandze-Saltpond by-pass in the Central Region and at Kibi in the Eastern Region. The Abandze-Saltpond by-pass deposits are known to be closely associated with some 30 pegmatite bodies, six of which are thought to be of commercial grade. It is estimated that these six deposits contain over 1,020,000 tonnes of pegmatite material suitable for the extraction of kaolin. The mineralogy of the deposit using X-ray diffraction methods indicated 97% kaolinite, 2% quartz and 1% muscovite, while chemical analysis gave the following results.

SiO_2	43.7%
Al_2O_3	35.5%

Table 7. Physical properties of 2 samples from Kibi kaolin deposit.

	Sample (A)	Sample (B)
	%	%
Shrinkage by drying	 2,70	2,40
Shrinkage by firing at 1250°C	 9,05	9,20
Total shrinkage	 11,75	11,60
Loss by drying	 32,70	31,00
Loss by firing at 1250°C	 13,70	13,00
Total loss	 46,40	44,50
Initial compression strength (kg/cm ²)	 0,14	—
Soakability (Porosity)	 —	5,80
Colour before firing	 —	White
Colour after firing	 Pure white	Creamy-white
Hardness at green state	 —	Easily scratched by finger nail
Plasticity	 —	Low

Fe₂O₃ 2.4%

H₂O 16.8%

At present, the Saltpond Ceramics Limited is utilizing the kaolin reserves in the Saltpond area for the manufacture of crockery, toilet bowls, hand washing basins and refractories.

The Kibi kaolin deposits are usually grey or white in colour and very pure. Kaolinite, quartz and mica are the main minerals present in the kaolin with kaolinite as the principal mineral. It constitutes about 60 to 100 per cent of the rock with an average of about 60%. These deposits are the largest known kaolin deposits in Ghana. About 1,520,000 cubic metres of kaolin have been estimated from the three swamps which cover the deposits. On the whole however, calculations have revealed that there is a total of about 3,234,043 metric tonnes of kaolin at Kibi. Table 7 above shows a summary of the physical properties of Kibi kaolin.

LIMESTONE

Although many limestone deposits occur in Ghana, only five deposits may be considered for economic exploitation. These are the Nauli, Bongo-Da, Oterkpolu, Fo River, and the Daboya deposits.

The limestone reserves at Nauli was evaluated in 1977 for its utilization as a flux in a proposed intergrated iron and steel complex. The total reserves at the time stood at 12 million tonnes within an area of 1,100,000 square metres with an average of more than 50% CaO. However, recent borehole tests have established reserves of 400 million tonnes and a potential of about 1000 million tonnes within the entire Tano Basin. Despite difficulties associated with the mining of these large deposits, 23 million tonnes of limestone outcrops known to be occurring at the surface could be mined by open cast methods.

It is estimated that, the Bongo-Da area have at least 15 million tonnes of very good quality limestone and some 20 to 30 million tonnes of dolomite. Generally, the limestone in this area averages 40–49% CaO, 1.2–4.2% MgO, 9.0–9.3% SiO₂ and 1.7–3.9% Al₂O₃. Investigations also revealed that the deposits contain 6.62 million tonnes of low magnesium limestone which could be mined from four quarry sites in the area.

The Buipe limestone deposits represents the largest occurrence of magnesian limestone rocks in

Fig. 5 Locations of the most important limestone deposits of Ghana.

Northern Ghana. The chemical composition varies considerably, however, the limestone generally contains about 48% CaO while the dolomite have about 30% CaO. The total reserves of the limestone and mudstone are estimated at 6.03 million metric tonnes while those of the dolomite are about 138 million metric tonnes. The reserves of dolomitic limestone and dolomite in the lower horizon are estimated at 400 million tonnes.

A preliminary investigation into the Oterkpolu limestone deposits by the Geological Survey Department have indicated reserves of limestone for open cast mining in two blocks, i.e. near Oterkpolu and near Niensi. At Oterkpolu, the available quantity of limestone has been estimated in the neighbourhood of 3 million tonnes, and 0.7 million tonnes at Niensi. The approximate amount of limestone found through investigations conducted by the Ghana Cement Works was 8 to 1.0 million tonnes averaging 60% calcium carbonate. Other limestone deposits include the Fo River deposit containing about 15 million tonnes of limestone and the Daboya deposits containing 162,000 tonnes with over 500,000 tonnes of dolomitic limestone. Fig. 5 shows the locations of the most important limestone deposits of Ghana.

Most of the country's limestone deposits are suitable for the manufacture of Portland cement, clinker, refractory materials and white lime.

PETROLEUM

Even though nearly half of Ghana's total area, i.e. about. 135,000 square kilometres is covered

Table 8. Quantity of oil produced from Saltpond Field by Agri-Petco of Ghana Incorporated

Period			Quantity (in barrels)
1st Oct.	—	31st Dec., 1978 —	295 988
1st Jan.	—	31st Dec., 1979 —	655 781
1st Jan.	—	31st Dec., 1980 —	664 254
1st Jan.	—	31st Dec., 1981 —	599 797
1st Jan.	—	31st Dec., 1982 —	434 750
1st Jan.	—	31st Dec., 1983 —	498 634
Total			3 149 204

by sedimentary rocks, there is still not much certainty of finding oil in commercial quantities in the country. The sedimentary rocks found mainly in four different parts of the country, had attracted the attention of oil companies and for the past several years, oil prospecting had been concentrated in these areas. The areas include the Tano Basin, the Keta Basin, the Voltaian Basin and the continental shelf. So far from the results of the prospecting of the various companies, the continental shelf is the only place which has produced small quantities of petroleum. In June 1970, Signal Oil Company discovered oil in a well about 14.4 km south of Saltpond. Initial tests carried out by the company showed that the well could produce a total of 3,600 barrels of oil a day. The quality of oil was good with the sulphur content being 0.5%. The company's geologists estimated the total reserves in this area at about 7.5 million barrels.

In 1977, Agri-Petco International, a U.S.A. company, drilled three offshore wells off the coast of Saltpond and the results of the drilling activities were encouraging. The company estimated that each of the three wells was capable of producing about 1000 barrels of oil per day. By 1978, six wells had been drilled and the company decided to develop this field. The initial daily production rate was to be 5000 to 6000 barrels of oil a day. Table 8 shows the quantity of oil which has been produced since 1st October, 1978, when Agri-Petco started producing oil from the Saltpond field.

It could be observed from the table that, so far, this company has produced 3,149,204 barrels of oil between the period of 1st October, 1978 and 31st December, 1983. Difficulties have been experienced in production from this field because the reservoir consists of seven thin pay sand with several different oil/water and gas/oil interfaces. The reservoir pressure has fallen below the bubble point and due to this production has declined to less than 2000 barrels of oil per day. Infact, by the end of February, 1982, production had declined to about 1350 barrels of oil per day.

REFERENCE

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