

PNP/BL 1980

98695

**AN ANALYSIS OF THE MARKETING
POSITION OF THE NATIONAL CEREALS
OFFICE (OFNACER)**

UPPER VOLTA

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October 1981

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This project was implemented under AID Contract
No. AID/afr-0242-C-00-1057-00 (\$45,094).

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I. INTRODUCTION

The following report is based on an examination of OFNACER's* activities that was done in June, July, and August of 1981. The primary purpose of the study was to assist OFNACER in determining where to construct several medium-sized warehouses that would be used in its marketing activities. Specifically, these warehouses were to be used as grain buying centers and grain retailing outlets in several small towns throughout the country. In the examination of the activities of OFNACER in 30 small towns, it was found that it was virtually impossible to justify the construction of these units on economic considerations. Therefore, a more wide-ranging review of OFNACER's activities and programs was done in an effort to determine if the construction of these individual units could be justified from a more global view of OFNACER's activities. The report, therefore, touches on several subjects related to the overall national grain market in Upper Volta.

The report is not intended to be a definitive study of either OFNACER or the national grain market. Rather, it attempts to look at specific aspects of the grain market and the role of OFNACER in that market. The report is limited due to the unavailability of information and data and, therefore, any conclusions are tentative. Hopefully, the report will raise issues for debate

*Office National Des Cereals.

and further study that will enable OFNACER and the Government of Upper Volta to formulate policy relative to the grain market that will help assure steady grain supplies for all areas of the country at a reasonable cost.

We wish to thank the Director of OFNACER and his officers, as well as the many OFNACER employees who aided in the study. We also wish to thank the many Voltaique officials of other agencies, ORD's, and administration who provided information throughout the country. Few are quoted directly, but the views of many helped formulate a more complete view of the national grain market.

In addition, support and assistance from USAID was invaluable, as was assistance from other national and multilateral aid agencies.

II. FINDINGS AND RECOMMENDATIONS

1. The limited evidence available indicates that OFNACER has little, if any, impact on consumer grain prices. OFNACER's retail grain sales are sporadic, and do not take due concern of actual costs and market conditions. OFNACER may be creating distortions in the market that will have negative effects on normal distribution and price stabilization systems.

Recommendation: OFNACER should discontinue operations in the retail grain trade. Wholesale grain trade or the utilization of licensed merchants should be instituted.

2. There is limited evidence to support the claim that intra-annual price fluctuations are abnormal and that excessive price gouging is occurring. It appears that high price fluctuations between harvests are the result of normal marketing and storage costs and limited supplies.

Recommendation: OFNACER should discontinue its differentiation between stabilization and security stocks. All stocks should be released on the market by a set formula that takes into account the actual storage and handling costs.

3. Government inconsistencies in marketing policy over the past years probably distorts the market. Merchants, not sure what direction government policy or price enforcement will

take, demand higher than normal profits to cover the risks inherent in an inconsistent atmosphere.

Recommendation: OFNACER should restrict its activities to buying surplus grain in high production years and releasing that grain according to "trigger prices" and to handling imported grain and food aid.

4. An atmosphere of antagonism between OFNACER and private grain traders exists. This relationship does not permit a climate in which the market can be understood, and coherent marketing policies formulated.

Recommendation: OFNACER should establish policy that permits free movement of grain merchants and cooperates with them to encourage producers and improve distribution.

5. The government's knowledge of the grain market is woefully lacking coherent marketing policies; marketing structures and prices are being established without an understanding of the market they are supposed to affect.

Recommendation: OFNACER establish a research and information section to undertake research on the grain market, and to collect data affecting that market. OFNACER, in conjunction with other government and private agencies, should review studies that have been done and determine what further research is necessary to more fully understand the market. Of particular importance is information on the organization

and behavior of the private grain trade, the extent and position of grain stocks, the production and sales positions of producers, and the behavior of consumers.

6. OFNACER is attempting to establish a national network for grain marketing. This program would establish a permanent infrastructure for buying and retailing grain. This infrastructure would be costly to maintain and operate. Information on the market is inadequate for basing such a policy decision.

Recommendation: OFNACER should explore the various options available that would limit the commitment to long-term expenses until information is available upon which to base these decisions.

Available options include:

- . Using contract merchants in the small towns through whom grain can be retailed.
- . Using mobile marketing techniques to market grain on the periodic markets, i.e., sell off the back of a truck.
- . Using wholesale marketing from the existing CDG warehouses.
- . Establishing long-term marketing agreements with private merchants that would allow them to develop storage, transport, and retailing facilities.

- . Using part of the AID counterpart funds to help strengthen the private grain trade, possibly in conjunction with the National Development Bank. Possibilities include grain storage contracts with merchants under approved warehousing and long-term transport contracts.
 - . Increasing on-farm and in-village grain stocks through technical assistance and loans to farmers or groups such as cereals banks.
7. Price and market policies do not appear to be formulated in relationship to the economic foundations of OFNACER's mandated objectives.

Recommendation: Formulas should be established under which OFNACER can set prices and direct market volumes. Once formulas are set, operational functions should be independent of other government authority.

8. Presently, OFNACER operates from large infusions of donated grain and financial aid. Its pricing structure dictates that it will continue to function only if that aid continues, or if the government accepts the financial obligations inherent in the present price structure.

Recommendation: Complete a review of the price structure immediately, with the definite goals of eliminating the need for external assistance or OFNACER's acceptance of the inevitable consequence of functional redundancy in the grain market.

III. THIRTY REGIONAL SITES

The Grain Marketing Development Project in Upper Volta suggested the construction of 30 warehouses as part of the price stabilization and production encouragement efforts of OFNACER. These warehouses were to be of medium size, approximately 250 ton capacity each, and were to be built in rural areas. The warehouses would be used as grain buying centers as well as retail grain outlets. The warehouses would permit storage of grain during the annual buying campaigns until shipment to larger storage facilities was made. They would also serve as depots of grain that would be available for sale to the small town and rural populations in the areas where they would be located.

OFNACER recommended to AID 30 towns for the construction of these warehouses. No explanation for the choice of towns was given, nor which criteria were used to include or exclude any town. Table 1 gives the suggested towns by administrative area (Departments). Within the OFNACER structure, each local center is managed by a controller operating out of a Departmental Management Center, which is given on the Table as the Centres Departementaux De Gestion. These towns are located on the national Map 1 in Annex II and on Department maps.

PRESENT SITUATION

Each suggested locality was examined in terms of its relative position in the grain market of Upper Volta. An attempt was made

TABLE I

OFNACER RECOMMENDED LOCATIONS FOR
SELLING/BUYING WAREHOUSES, USAID FUNDING

<u>Departments</u> ^{1/}	<u>CDG</u> ^{2/}	<u>Localities</u> ^{3/} <u>Sous Prefectures</u>	<u>Capacity Required</u>	<u>Total</u>
Centre	Ouagadougou	Kombissiri	250	1,250
		Manga	250	
		Zorgho	250	
		Po	250	
		Ziniare	<u>250</u>	
Centre-Est	Koupela	Gerango	250	750
		Zabre	250	
		Ouargaye	<u>250</u>	
Centre-Nord	Kaya	Kongoussi	250	1,250
		Tema	250	
		Tikare	250	
		Boulsa	250	
		Korsimoro	<u>250</u>	
Centre-Ouest	Koudougou	Yako	250	750
		Leo	250	
		Subou	<u>250</u>	
Est	Fada	Bogande	250	750
		Diapagu	250	
		Kantchari	<u>250</u>	
Nord	Ouahigouya	Segueneza	250	500
		Gourcy	<u>250</u>	
Volta Noir	Dedougou	Boromo	250	1,000
		Nauna	250	
		Tougan	250	
		Safane	<u>250</u>	
Hauts-Bassins + Comoe	Bobo Dioulasso	Banfara	250	500
		Hounde	<u>250</u>	
Sub-Ouest	Gaoua	Barie	250	750
		Kampti	250	
		Dano	<u>250</u>	
Total capacity				<u>7,500</u>

^{1/} Departments are the regional administrative units; there are 11 Departments.

^{2/} CDG: Centre Departmental de Gestion, Department-level management unit of OFNACER.

^{3/} Sous Prefecture: Subregional administrative units.

Source: OFNACER, Request to USAID, October 22, 1980.

to review OFNACER's recent activities in the area, production of cereals, existing facilities, transport network, population, and other related factors. The information is obviously incomplete due to the difficulty in locating relevant data.

Table 2 summarizes that information for each of the 30 localities. Nine locations were eliminated because it is felt that OFNACER's present facilities in those towns are adequate for current marketing levels. The next section ranks the top ten locations. It should be pointed out that although five selling centers are listed, retail grain sales in general are not recommended. These are only the best five selling centers studied. Likewise, building any centers for purchasing grain should await the results of the present campaign, and a more coherent producer pricing policy by the government.

RANKING THE TOP TEN CENTERS

Using the analysis of buying potential and selling volumes, the 30 preselected sites are compared in Table 2. Using other criteria, such as distance from urban centers, etc., and eliminating those centers where facilities already exist or no activity goes on, the top ten sites are ranked numerically. It should be pointed out that other sites may have just as much or more merit as centers for OFNACER warehouses. However, they were not listed for consideration. Before further investment is made, they should be analyzed. They include the high producing regions of Banfora (Comoé), but not Banfora City; the regional towns of Bobo Dioulasso (Hauts Bassins), other than Houndi; and in the Volta Noire, Solenzo and Boromo. Further investigation should also be done

in Koudougou, particularly at Leo, for which sufficient information was lacking.

The selected sites by order of rank are:

1. Batie: High producing region. Too isolated to draw heavy competition from private merchants.
2. Kamptie: Reasons same as 1 above.
3. Safane: In the center of a fairly high producing region and less likely to draw excessive private competition.
4. Nouna: High producing region. Relatively isolated.
5. Hounde: High producing region. Disadvantage is that its position along main highway will draw excessive competition from grain traders.
6. Kongoussi: As a selling center, it has the potential to supply Tikare and Tema with cereals.
7. Tikare: One of the highest volume retail outlets. Administrative warehouse in bad repair.
8. Seguenega: High retail volume and can be isolated due to bad road. However, administration and two ORD warehouses are available.
9. Boulssa: Relatively high sales volume and relatively isolated.
10. Tema: Retail volume is adequate, but its position on a new road hardly merits high investment in storage capacity.

TABLE 2

RANKING OF 30 CENTERS SELECTED BY OFNACER FOR WAREHOUSE CONSTRUCTION

Center	Sales Volume ^{1/}	Cereals Self Sufficiency ^{2/}	Buying Potential ^{2/}	Population Density ^{2/}	Road Access ^{3/}	Competition ^{2/4/}	Recommended Capacity ^{5/} Tons	Present Structure	Situation	Eliminate	Rank
Kombiatri	O	M	L	H	E	H		Metal	OFNACER	X	
Manga	O	M	M	H	G	H		Metal	OFNACER	X	
Po	O	H	H	L	E	H		Metal	OFNACER	X	
Zintara	O	M	L	H	G	H		Concrete	OFNACER	X	
Zorgho	O	M	M	H	E	H		Metal (2)	ORD-OFNACER	X	
Garanyo	O	H	M	H	F	H		Rent			
Zabre	O	H	H	M	P	L		Metal	OFNACER	X	
Quargaya	O	H	H	M	F	M		ORD			
Kongoussi	X	L	L	H	G	M	200	ORD			6
Tema	X	L	L	H	G	M	100				10
Tikara	X	L	L	H	P	L	100		Admin.		7
Boulza	X	M	L	M	P	L	100				9
Koralmoro	X	L	L	M	F	M					
Yako	O	L	L	H	F	H		Concrete(1) Metal(1)	Rent OFNACER	X	
Leo	O	H	H	L	P	L			Admin.		
Sabou	O	M	M	H	E	H					
Boganda	O	M	L	L	P	L					
Djapaga	O	H	M	L	P	M					
Kantchari	O	H	M	L	P	M					
Seguenuga	X	L	L	H	P	L	100		Admin.		8
Gourey	O	L	L	H	F	L			Admin.		
Boromo	O	H	H	L	E	H		Concrete	Rent		
Nouma	O	J	H	M	F	M	200		Rent		4
Tougan	X	L	M	M	P	L		Concrete	Rent		
Safane	O	H	M	M	F	M	100				3
Banfora	O	H	H	L	E	H		Concrete	OFNACER	X	
Boundi	O	H	H	L	E	H	100		Rent		5
Dano	O	H	H	M	F	M		Metal	OFNACER	X	
Kampile	O	H	H	L	P	L	100		Admin.		2
Battio	O	H	H	L	P	L	100		Admin.		1

^{1/} O = Unfavorable
X = Favorable or marginal.

^{2/} H = High
M = Medium
L = Low.

^{3/} E = Excellent
G = Good
F = Fair
P = Poor

^{4/} Competition on buying by private traders.

^{5/} Capacity should be adjusted for economies of building costs.

BEST AVAILABLE DOCUMENT

III. 5

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IV. OFNACER STORAGE FACILITIES

Storage facilities of OFNACER include both owned and leased warehouses. Most of these are located in Department capitals, although some storage capacity exists also in regional (sous-prefecture-arrondissement) towns. The first warehouses built for OFNACER were in the 1973-1974 period. These include concrete local construction, prefab superstructure and roof with concrete locally constructed walls, and corrugated metal prefab structures with concrete floors. Since 1979, a program financed primarily by German aid has increased storage capacity by several thousand tons, both with portable butyl type silos and permanent concrete warehouses.

In all cases, the capacity of the storage facilities is somewhat questionable. Most grain is stored in bags. Although this probably increases real storage capacity because grain is stored in a greater depth (many of those warehouses could not support heavy pressure on outside walls), the way in which the sacks are stacked obviously affects actual storage capacity. In most cases, air space is left around the grain to facilitate treatment of stored grain.

In warehouses where grain is stored for long-term (inter-annual) security requirements, maximum utilization of storage space appears to be obtained. It is likely that these facilities have a real capacity greater than the calculated capacity (500 tons and 1,000 tons).

In warehouses where grain is stored for ongoing distribution and sales, real working capacity will, in most cases, be less than calculated capacity. This occurs in order to separate different types of grain, maintain inventory controls, move stocks in and out,

and carry out more frequent treatment than is necessary in long-term storage.

Tables 1 through 12 give storage facilities by locations, capacity, and source that have been constructed over the last decade. Table 13 below summarizes that capacity for storage under OFNACER control. The theoretical capacity is approximately 45,000 tons for stabilization stocks and 34,500 tons for security stocks. Of the latter, 10,000 tons are portable butyl silos and 24,500 tons are permanent structures with 5,500 more tons being planned.

As was noted above capacity figures may not be accurate. For example, if the figure of 1.6 tons per square meter that is used to calculate tonnage of Table 7 structures was used in Table 5, capacity would be approximately 4,500 tons greater, as these warehouses have approximately 1,250 m² of space. On the other hand, the metal prefabs listed under Table 5 seem overrated and are probably closer to 300 ton capacity structures. Finally, in the ten centers where security stocks are stored, an office/guard's quarters/warehouse building exists. The storage capacity of these units is approximately 50 tons, which adds an additional 500 tons' capacity. There is also a capacity of approximately 5,800 tons in 245 silos scattered around 52 sites in Upper Volta. These are apparently the metal silos built for bulk storage. These were built with French financing and are no longer used due to problems related to handling bulk grain that were never resolved.

TABLE 3

STORAGE FACILITIES CONSTRUCTED UNDER
ENTENTE LOAN FUNDS, USAID, 1973-74

<u>Location</u>	<u>Capacity (Metr. Tons)</u>	<u>Type</u>	<u>Contractor</u>	<u>In Use By</u>
1. Ouagadougou	1,500	Prefab/concrete	SECOBAICO/SAND	12/31/73
2. Ouagadougou	1,500	Masonry	SECOBAKO	8/31/74
3. Ouagadougou	1,500	Masonry	SECOBAKO	8/31/74
4. Ouagadougou	1,500	Masonry	SECOBAKO	8/31/74
5. Bobo Diou- lasso	1,500	Prefab/concrete	SATOM/SAND	12/31/73
6. Bobo Diou- lasso	1,500	Masonry	SATOM	8/31/74
7. Fada-N' Gourma	1,500	Masonry	SOVE	12/31/74
8. Fada-N' Gourma	1,500	Masonry	SOVE	12/31/74
9. Ouahigouya	1,500	Masonry	SATOM	8/31/74
10. Kaya	1,500	Masonry	SATOM	8/31/74
11. Dori	<u>500</u>	Masonry	SATOM	8/31/74
	<u>15,500</u>			

Source: USAID/Upper Volta.

TABLE 4

PLACEMENT OF PREFAB CORRUGATED METAL WAREHOUSES
GERMAN AID, 1974

(Theoretical Capacity: 200 Tons; Actual Capacity:
Up to 400 Tons)

15	Ouagadougou	OENACER
3	Cuagadougou	DSA
1	Ouagadougou	Croix Rouge (Polyéthylène)
3	Ouahigouya	ORD
2	Titao	Sous-Comité
2	Cuahigouya	Sous-Comité
1	Soubo	Sous-Comité
1	Bogandé	Sous-Comité
2	Sebba	Sous-Comité
1	Koala	Sous-Comité
1	Piela	Sous-Comité
1	Gorgadji	Sous-Comité
2	Aribinda	Sous-Comité
2	Gorom-Gorom	Sous-Comité
<u>1</u>	Dori	Croix Rouge (Polyéthylène)

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Source: Embassy of the Federal Republic of Germany, Ouagadougou.

TABLE 5
PRESENT OR PLANNED LOCATIONS OF
CORRUGATED METAL PREFAB WAREHOUSES
UNDER OFNACER CONTROL, 1981

<u>Location</u>	<u>Units^{1/}</u>	<u>Capacity^{2/}</u>
Zorgo	1	400
Koupela	2	800 ^{3/}
Pc	1	400
Zabre	1	400
Kombissiri	1	400
Dassouri	1	400
Yako	1	400
Ouahigouya	1 ^{4/}	400
Manga	1	400
Dano	1	400
Dissin	1	400
Bouroum	1	400
Dori	1	400
Titao	<u>1</u>	<u>400</u>
	<u>15</u>	<u>6,000</u>

^{1/}All 15 units were in Ouagadougou as noted in Table 2.

^{2/}Capacity is given here as maximum noted in Table 2 and as reported by OFNACER.

^{3/}Two units were combined to create a rice hulling facility. Thus considerable storage capacity is lost.

^{4/}Of the five warehouses noted in Table 2, one OFNACER report lists four as under their control; however, at least two appear no longer serviceable.

Source: Note to USAID from Director of Aides - OFNACER, Feb. 1981.

TABLE 6

WAREHOUSES
CONSTRUCTED BY OFNACER WITH FUNDS
FROM SALE OF EEC GRAIN

<u>Location</u>	<u>Capacity (Tons)</u>	<u>Type</u>
1. Koupela	1,500	Concrete
2. Dedougou	<u>(1,500)*</u>	Concrete
	<u>1,500*</u>	

*The warehouse in Dedougou was never completed due to improper construction and will be torn down.

TABLE 7
WAREHOUSES CONSTRUCTED UNDER
USAID GRANT IN 1974

<u>Location</u>	<u>Units</u>	<u>Theoretical Capacity</u> ^{1/}	<u>Theoretical Total Capacity</u>	<u>Probable Capacity</u>	<u>Probable Total Capacity</u>
1. Djibo	5 ^{2/}	480	2,400	500	2,500
2. Aribinda	3	480	1,440	500	1,500
3. Gorom-Gorom	3	480	1,440	500	1,500
4. Sebba	3	480	1,440	500	1,500
5. Titao	3 ^{3/}	480	<u>1,440</u>	500	<u>1,500</u>
			<u>8,160</u>		<u>8,500</u>

^{1/}Theoretical capacity is based upon 1.6 yons per m², height is not given.

^{2/}Apparently six units were built in Djibo, but it is likely that one was built with other funds, possibly EEC, which built ten warehouses. Only four are presently under use by OFNACER; one is used by the CRD; and one by the Army.

^{3/}One of these units is unuseable and needs repairs.

Source: USAID, Ouaga.

TABLE 3
OTHER STORAGE FACILITIES CONSTRUCTED
IN 1973/74 PERIOD

<u>Source</u>	<u>Locations</u>	<u>Capacity</u>	<u>Controlled by</u>
Loan: World Bank	Koupela		ORD
Through BND	Fada Banfora Dedougou		ORD ORD ORD
		5,370	
Grant: FED		5,000	Sous-comite

TABLE 9
MISCELLANEOUS STORAGE

Inherited from SOUOLCOM	Ouaga	500	OFNACER
	Central) Direction)	500 <u>500</u>	OFNACER OFNACER
		1,500	

Source: Director of Aid, OFNACER, May 1980.

TABLE 10
PORTABLE BUTYL SILOS

<u>Source</u>	<u>Location</u>	<u>Capacity</u>	<u>Controlled By</u>
German Aid	Ouaga - 13*	6,500	OFNACER
	Bobo - 2	1,000	OFNACER
	Dedougou - 4	2,000	OFNACER
	? - <u>1</u>	<u>500</u>	OFNACER
		<u>20</u>	<u>10,000</u>

*Locations in May 1980. These change by need.

Source: Director of Aid, OFNACER.

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TABLE 11

WAREHOUSES CONSTRUCTED UNDER SECURITY
STOCK PROGRAM - 1970 TO PRESENT

(German Aid)

<u>Location</u>	<u>Units</u>	<u>Capacity</u>	<u>Total Capacity</u>
1. Dedougou	3	1,000	3,000
	4	500	2,000
2. KouDougou	2	500	1,000
3. Tenkodogo	4	500	2,000
4. Bobo Dioulasso	2	1,000	2,000
	3	500	1,500
5. Diebougou	3	500	1,500
6. Zabre	2	500	1,000
7. Banfora	4	500	2,000
8. Gaoura	5	500	2,500
9. Ouaga	4	1,000	4,000
	4	500	2,000
			<u>24,500</u>
10. Fada N'Gourma			

TABLE 12
WAREHOUSES COMPLETED OR UNDER CONSTRUCTION
OR PLANNED, VARIOUS DONORS, 1980-81

<u>Source</u>	<u>Location</u>	<u>Capacity</u>	
Loan: BADEA	Ouagadougou	2 x 3,250 ^{1/}	6,500
	Ouagadougou	7 x 75 ^{2/}	525
	Dedougou	1 x 1,500 ^{3/}	1,500
Swiss Aid	Diebougou	1 x 1,500 ^{3/}	1,500
	Ouaga	1 x 500 ^{4/}	<u>500</u>
			<u>10,525</u>

^{1/}Exact capacity unknown, given as reported.

^{2/}Reported as in city retail outlets.

^{3/}OFNACER agents report as FAO warehouses.

^{4/}Supposedly an experiment in bulk storage.

Source: OFNACER, 2/19/81

TABLE 13
SUMMARY OF OFNACER STORAGE

<u>Source</u>	<u>Capacity (Tons)</u>	<u>Table</u>	<u>Type^{1/}</u>
AID Entente	15,500	1	Concrete/metal
German metal	6,000	2-2a	All metal
OFNACER (FED)	1,500	3	Concrete/metal
USAID grant	8,000	4	Concrete/metal
Souolcom	500	6	Concrete/metal
	1,000	6	Concrete/metal
German Aid	10,000	7	Butyl
	24,500	8	Concrete/metal
BADEA	8,252	9	Concrete/metal
Swiss	1,500	9	Concrete/metal
	<u>500</u>	9	<u>?2/</u>
	77,525		
Stabilization	45,025		
Security stocks	34,500 ^{3/}		
Planned security	<u>5,500^{4/}</u>		
Present and Planned	<u><u>85,025</u></u>		

Source: Tables 1-9.

^{1/}Type concrete/metal is usually concrete floors and walls with metal roof, except for prefab/concrete listed in Table 1.

^{2/}Bulk storage, believed metal.

^{3/}Includes 10,000 tons of butyl silos from Table 7, but does not include present warehouses in Fada N'Gourma, for which capacity was unknown.

^{4/}Includes present capacity in Fada N'Gourma.

V. OPERATIONS COSTS OF RETAIL OUTLETS

OFNACER operates retail outlets throughout the country. Approximately 100 such outlets exist. Generally, two types of operations are distinguished: (1) outlets staffed by OFNACER employees, and (2) outlets operated on a commission basis. In the first case, the retail outlets are operated year round, regardless of commercial activity and are, therefore, a higher fixed cost operation. In the second case, government employees of other services, such as the administration or ORD, are paid a commission, usually ten CFA, per sack sold. OFNACER, particularly controllers at the CDG's*, prefer operations run by OFNACER employees, primarily due to better stock and financial control. This is because controllers can deduct shortages of grain or money from employees salaries, or remove them from government service. The low commissions paid to non-OFNACER employees would require tremendous volumes of sales to recover the loss of even one sack of grain, and the threat of loss of job is virtually nonexistent.

The operating costs of individual retail outlets was not detailed in OFNACER reports. These could be calculated by a detailed analysis of the accounts of individual CDG's, but even in this case, the account categories vary between CDG's, particularly relating to transport to centers, making comparisons less precise than would be hoped. For example, in many centers, grain is delivered directly to the retail outlets from Ouagadougou and the transport costs are reported only at the national level. In

*CDG = Centre Departmental de Gestion.

other cases, transport is provided from the CDG and costs are generalized at the regional level.

An examination of the monthly reports of the CDG's over the past three years does provide a basis of comparison that demonstrates the volume effects of retail marketing on both time and geographic dimensions. As can be seen from Table 14 operating costs of CDG's vary much less than volume of sales. Thus, operating costs per kilogram of grain sold both as absolute value and percentage of sales vary widely. In the 1980/81 fiscal year, costs are as low as 2.1 FCFA per kilogram sold and three percent of sale value in Kaya, and as high as 72.5 FCFA/kilogram sold and 67.6% of sales value in Koupela. Compare those 1980/81 Koupela costs with Koupela's 1973/79 costs of 5.9 FCFA/kilogram and 11.5% of sale value, and it is easy to see the impact that volume of sales has on OFNACER's operating expenses.

Even further distortions appear when examining the month-to-month grain movements. For example, Table 15 compares the 1980/81 monthly grain sales for Ouahigouya and Kaya, two of the major sales areas in Upper Volta. Even though these two CDG's have more consistent sales than most places in Upper Volta, their operating costs per kilogram of sales vary almost 5,000 percent throughout the year. The reason for this wide variation can be largely explained by examining columns 3, 6, and 9 in Table 16, the number of months' sales have occurred at the 50 retail outlets examined in detail. Even within a department such as Kaya, grain can be sold as little as one month during the year at one center, and as much as twelve months at another. A direct comparison

TABLE 14

ANNUAL GRAIN SALES BY CDC 1978/79-1980/81

	Accounting Year	Quantity Sold Kilograms	Value Sold FCFA	Operating Costs FCFA	Operating Costs		Data For No. Months ^{1/}
					Per Kg. Sold FCFA	Percentage Sales Value	
Kaya	1978/1979	5,140,803	248,463,890	21,354,647	4.15	8.6	12
	1979/1980	1,944,935	69,647,560	10,734,039	5.5	15.4	10
	1980/1981	3,644,901	255,300,265	7,685,342	2.1	3.0	9
Ouahigouya	1978/1979	1,089,131	72,079,940	10,638,925	9.8	14.8	12
	1979/1980	376,653	22,485,251	4,251,610	11.3	18.9	4
	1980/1981	3,912,346	274,099,950	10,072,232	2.8	4.0	8
Fada N'Gourma	1978/1979	1,681,391	95,021,926	10,238,362	6.1	10.8	10
	1979/1980	N/A	N/A	N/A	-	-	-
	1980/1981	339,586	23,133,115	3,330,191	9.8	14.4	7
Koupoia	1978/1979	2,138,073	109,293,281	12,547,086	5.9	11.5	12
	1979/1980	143,659	11,500,005	5,543,591	38.6	48.2	6
	1980/1981	117,100	12,549,705	8,485,198	72.5	67.6	8
Koudougou	1978/1979	813,659	52,491,004	10,733,065	13.2	20.4	12
	1979/1980	1,083,034	68,386,217	15,077,947	13.9	22.0	12
	1980/1981	221,550	18,292,216	9,839,614	44.4	53.8	7
Dedougou	1978/1979	373,319	27,968,430	12,017,479	32.2	43.0	12
	1979/1980	351,877	24,640,758	12,802,594	36.4	51.9	12
	1980/1981	349,301	26,135,013	7,580,739	21.7	29.0	8
Bobo Dioulasso	1978/1979	532,597	41,938,125	26,185,909	49.2	62.4	12
	1979/1980	335,850	27,506,400	17,327,967	51.3	62.7	11
	1980/1981	184,350	11,990,255	10,019,343	54.3	83.6	6
Gaoua	1978/1979	111,300	8,188,050	7,735,487	69.5	94.5	2 ^{2/}
	1979/1980	552,270	40,223,180	13,930,092	25.2	34.6	12
	1980/1981	243,924	19,979,835	11,159,392	45.7	55.9	9

Source: OFNACER, CDC Monthly Reports.

^{1/} Some monthly reports not available, 80/81 fiscal year through June 1981.

^{2/} Ten months were included with Bobo Dioulasso.

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TABLE 151980/81 GRAIN SALES BY MONTH IN KAYA AND OUAHIGOUYA

<u>Date</u>	<u>Quantity Sold Kilograms</u>	<u>Operating Costs FCFA/Kilogram</u>
<u>Kaya</u>		
Oct. 1980	115,979	11.4
Nov. 1980	112,419	11.7
Dec. 1980	70,552	15.0
Jan. 1981	154,069	5.0
Feb. 1981	101,759	9.3
Mar. 1981	221,870	3.6
Apr. 1981	975,251	.9
May 1981	941,482	.4
June 1981	951,521	.4
<u>Ouahigouya</u>		
Oct. 1980	96,692	9.3
Nov. 1980	N/A	N/A
Dec. 1980	87,738	36.9
Jan. 1981	302,642	3.3
Feb. 1981	211,347	1.4
Mar. 1981	396,397	2.1
Apr. 1981	464,665	2.6
May 1981	665,380	1.7
June 1981	1,188,987	1.2

TABLE 16
VOLUME AND DISTRIBUTION OF GRAIN SALES
TO OFRACER OUTLETS 1978/79-1980/81

CDG	Locality	Sales 1978/79			Sales 1979/80			Sales 1980/81		
		Total (Kgs.)	Monthly Average	No. Months Sales Occurred	Total (Kgs.)	Monthly Average	No. Months Sales Occurred	Total (Kgs.)	Monthly Average	No. Months Sales Occurred
Ouagadougou	Kombloufèl	-	N/A	-	-	N/A	-	21,628	2,162.8	3
	Mangu	-	N/A	-	-	N/A	-	3,444	344.4	1
	Po	-	N/A	-	-	N/A	-	8,090	809.0	1
	Zintare	-	N/A	-	-	N/A	-	17,954	179.5	1
Koupeïa	Zorgho	-	N/A	-	-	N/A	-	5,156	515.6	6
	Carango	62,145	6,214.5	10	-	N/A	-	10,581	1,058.1	5
	Zabre	21,400	1,783.3	1	-	N/A	-	3,414	341.4	6
	Ouangaye	31,000	3,100.0	3	-	N/A	-	1,628	162.8	4
Kaya	Kongoussi	45,682	3,806.8	4	234,849	19,570.8	7	425,234	47,248.2	9
	Tema	62,668	5,222.3	2	83,543	6,961.9	6	131,610	14,623.3	9
	Tikare	3,540	295.0	1	175,059	14,588.3	7	1,545,984	17,177.6	9
	Boulba	719,045	59,920.4	12	132,699	11,058.3	8	60,550	6,727.8	5
Koudougou	Koromoro	349,113	2,909.8	6	20,650	1,720.8	4	31,602	3,511.3	7
	Yako	63,443	5,286.9	10	137,210	1,143.4	9	66,765	7,418.3	9
	Leo	175,671	14,639.3	9	14,597	1,214.4	4	8,257	917.4	4
	Subou	25,790	2,149.2	4	9,012	751.0	3	2,194	243.8	2
Fada	Bogande	18,290	1,524.2	3	-	N/A	-	124,303	10,365.3	7
	Diapaga	7,450	620.8	3	-	N/A	-	400	44.4	1
	Kantcharl	24,543	1,326.9	9	-	N/A	-	-0-	-0-	-
	Sagueuaga	140,217	11,684.7	11	14,107	2,021.4	3 ^{1/2}	641,389	71,265.4	9
Dudougou	Gourcy	20,926	1,743.8	10	38,686	7,737.2	4 ^{2/3}	172,583	14,381.9	8
	Boromo	2,515	209.6	4	17,066	1,422.2	4	1,886	209.6	5
	Nouna	16,750	1,395.8	9	1,650	137.5	2	6,730	747.8	6
	Tougar	154,043	12,836.9	8	88,350	7,362.5	7	90,708	10,078.7	7
Bobo	Safaro	3,220	268.3	1	-	-0-	-	-0-	-0-	-
	Banfora	20,315	1,692.9	10	6,900	575.0	3	6,950	579.2	3
	Houndi	705	58.7	1	-	-0-	-	-0-	-0-	-
Gaona	Dano	195	16.3	1	-	-0-	-	39,272	4,363.5	7
	Kmptia	-	-0-	-	-	-0-	-	21,964	1,830.3	7
	Battie	8,900	741.7	1	-	-0-	-	11,600	966.7	3

^{1/} Covers only five months, 10/1/79-3/1/80.

^{2/} Covers nine months through 6/30/81.

Source: OFRACER, CDG monthly reports.

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of Tables 14 and 15 shows a direct relationship between numbers of months sales occur and operations cost per kilo sold.

On the average, OFNACER reports that its nationwide grain sales operations run from 25 to 26 FCFA per kilogram.* This was given as direct (or variable) costs of 6 FCFA/kilogram and 18 FCFA structural costs (fixed). These figures have been the result of the experience of the recent two to three years. In a sense, they are somewhat incorrect. First, the division of fixed and variable costs is hardly reflective of appropriate economic considerations. Variable costs are comprised of only three elements: handling (meaning loading and unloading and possible grain treatment), sales commissions, and transport. Transport is apparently combined haulers and imputed costs for OFNACER vehicles.** All other costs are reported as fixed costs, implying that they would be incurred even if OFNACER handled no grain or reached its goal of 60,000 to 90,000 tons.

Obviously, this is not true, but it is probably reflective of OFNACER's thinking. That is, that OFNACER must remain an organization of at least its present level regardless of its requirements or abilities to handle grain marketing functions.

*This figure was reported to the U.S. Ambassador by the Minister of Rural Development in a letter of February 11, 1981. It was cited at 25.15 FCFA/kilogram in discussions with AID controllers relating to their preliminary audit of the 1979/80 fiscal year of OFNACER. See 1979/80 Financial Report in Appendix.

**In fact, some double counting appears to take place, as all costs associated with vehicles are also counted under fixed costs. Variable costs given as 6 FCFA/kilogram are not reflected in the financial report of 1979/80 as noted in the Appendix. Those Figures, however, may be incorrect.

Secondly, these cost figures do not include depreciation on plant and equipment. This figure was estimated as 196,312,460 FCFA (7.31 FCFA/kilogram) for 1979/80. This figure should obviously be increasing with the recent expansion of warehouse facilities. In any case, it appears that no depreciation account has ever been established for eventual replacement of plant and equipment. Thus, given the deficits that OFNACER incurs in its current budget, it is subsidizing its operations by expending capital assets.

A further problem will be the lack of funds to repay loans. This is especially true of the USAID entente loan of 1973 for the construction of warehouses* which supposedly falls due in 1983. A loan repayment fund should have been established from current revenues so that the true costs of operation would be reflected in OFNACER budgets and so that loan liquidation would be possible.

The division that OFNACER obviously makes is that only those costs that are contracted on a per-unit basis (kilogram, ton kilometer) are variable with quantity. The fact that all other costs are considered fixed reflects the management inflexibility inherent in OFNACER's operation. That is, it is determined to establish a nationwide grain marketing network and then target a grain volume to support that network. It does not appear to have made any attempts to determine the most effective way to meet its mandated objectives of encouraging production and stabilizing prices, and then creating a management structure that would best accomplish these goals.

*See section on existing storage capacity.

VI. COSTS OF BUYING AND SELLING CENTERS AND THEIR POTENTIAL

The cost of operating small retail warehouses will depend upon their initial construction cost. The major cost elements are depreciation, interest on investment and maintenance costs. For the purpose of estimation, we depreciate the facilities over 20 years. Interest is charged at ten percent as an opportunity cost for the employment of capital. Maintenance and repairs are estimated at three percent per year of initial cost.

If a facility is built, at least two full-time employees will be needed at a cost of about 30,000 FCFA per month each. The total annual labor costs are, therefore, 720,000 FCFA.

For a 200-ton capacity warehouse, Table 17 gives per ton capacity annual fixed costs for warehouses of various construction costs. It is likely that these estimates are low for the lower cost warehouses as both depreciation and maintenance would be higher. The reverse is probably true for higher cost units.

Variable costs will not be significantly different if OFNACER owns or rents a warehouse. Therefore, for economic analysis, only fixed costs are considered. Table 18 sets out per kilogram fixed costs for each level of investment cost as a function of the volume of grain handled by that warehouse. With OFNACER's cost structure, an upper limit of 10 FCFA/kilogram should be set for local handling costs, including general overhead and transportation,

TABLE 17

ESTIMATED FIXED COSTS PER TON CAPACITY
OF 200-TON GRAIN WAREHOUSES - OFNACER

Annual Cost, FCFA/Metric Ton Capacity

<u>Constr. Cost</u>	<u>Deprec. (20 yr.)^{1/}</u>	<u>Interest on Invest.^{2/}</u>	<u>Salaries^{3/}</u>	<u>Maint. and Repairs^{4/}</u>	<u>Total Fixed^{5/}</u>
20,000	1,000	2,000	3,600	600	7,200
30,000	1,500	3,000	3,600	900	9,000
40,000	2,000	4,000	3,600	1,200	10,800
50,000	2,500	5,000	3,600	1,500	12,600
60,000	3,000	6,000	3,600	1,800	14,400
70,000	3,500	7,000	3,600	2,100	16,200
80,000	4,000	8,000	3,600	2,400	18,000
90,000	4,500	9,000	3,600	2,700	19,800
100,000	5,000	10,000	3,600	3,000	21,600

^{1/} 20-year straight line.

^{2/} 10% on initial investment, opportunity cost.

^{3/} Two people at 30,000 FCFA/month.

^{4/} 5% of construction cost.

^{5/} Annual fixed cost per ton is therefore equal to $FC = (.05c + .03c + \text{salaries}) = .18c + \text{salaries}$ when $c = \text{construction cost per ton capacity}$.

TABLE 18

PER KILOGRAM COSTS TO OPERATE A 200-TON
GRAIN WAREHOUSE AT VARIOUS VOLUMES (FCFA)

<u>Construction Cost Per Ton Capacity</u>	<u>Volume in Tons per Year</u>					
	<u>50</u>	<u>110</u>	<u>200</u>	<u>300</u>	<u>400</u>	<u>500</u>
20,000	28.8	14.2	7.2	4.8	3.6	2.88
30,000	26.0	18.0	9.0	6.0	4.5	3.6
40,000	43.2	21.6	10.8	7.2	5.4	4.32
50,000	50.4	25.2	12.6	8.4	6.3	5.04
60,000	57.6	28.8	14.4	9.6	7.2	5.76
70,000	64.8	32.4	16.2	10.8	8.1	6.48
80,000	72.0	36.0	18.0	12.0	9.0	7.20
90,000	79.2	39.6	19.8	13.2	9.9	7.9
100,00	86.4	43.2	21.6	14.4	10.8	8.64

Fixed cost per kilogram is equal to annual fixed cost per ton X
200 divided by volume or:

$$FC/kg. = \frac{(.18C + \text{salaries}) \times 200}{\text{volume handled in kgs.}}$$

to 15-20 FCFA if OFNACER is going to stay within the 25-30 FCFA/kilogram overall costs it presently incurs.

From Table 16, it can be seen that only two centers (Boulsa and Kersimoro) in 1978/79, one (Kongoussi) in 1979/80, and three (Tikare, Kongoussi, and Seguenega) in 1980/81 have adequate volume to support a facility at any level of construction cost. If construction costs are as high as 60,000 FCFA per ton capacity, which is highly likely, then 300 tons of volume are essential to justify construction of a sales warehouse. Again only Kongoussi, Tikare, Seguenega, Boulsa, and Kersimoro have reached that volume in the past three years. Only Tikare has averaged that level and then only because of exceptionally high sales over the last year.

As purchasing centers, the volume of grain handled will again need to be at least 300 tons per year to justify a warehouse. This, in fact, would make it difficult to maintain the margins for grain handling at 25-30 FCFA. This volume would require 9,000 tons to be purchased through a total of 30 centers. Again, volume is the key. From examination of the available data, no regional center has purchased 300 tons of grain a year since the 1978/79 season. Although the potential is there for several centers to buy this much grain, accomplishing this will depend on OFNACER price policy and organization. Until the record improves, it does not seem justifiable to invest in buying facilities at this time.

For example, the most productive regions of the country are shown on Table 19 below. In 1979/80, each region could have supported three to four buying centers at a fixed cost of 10 FCFA/kilogram bought. Only two could have supported one center in 1980/81.

TABLE 19
GRAIN PURCHASES BY THREE WESTERN AND SOUTHERN CDG's

	<u>1979/80</u>	<u>1980/81</u>
Hauts-Bassins	700 T. 113	320 T. 402
Gaoua	1,370 T. 069	385 T. 239
Volta Noire	1,464 T. 620	174 T. 454

Source: OFNACER.

It would appear that adequate surpluses exist in these three regions (which cover also the ORD of Comoe-Banfora) and, therefore, the potential to buy grain should be there. An analysis of production and grain requirements is given in Table 20. Given the consistently high cereals surpluses of all of the sous prefectures in the south and west of Upper Volta, one can only question if price policy or management are at fault for OFNACER's failure to buy grain in the past two seasons.

TABLE 20

ESTIMATES OF SURPLUSES AND DEFICITS OF CERFAL PRODUCTION
FOR SOUS PREFECTURES IN UPPER VOLTA

(Metric Tons)

<u>Dept./ORD^{1/}</u>	<u>Prod.</u> <u>1980/81</u>	<u>Prod.</u> <u>1979/80</u>	<u>Requirements^{2/}</u>	<u>Surplus(+)</u> <u>Deficit(-)</u> <u>1980/81</u>	<u>Surplus(+)</u> <u>Deficit(-)</u> <u>1979/80</u>
<u>Centre Est</u>					
Koupela	15,043	21,022	21,509	- 6,466	- 487 ^{4/}
Tenkodogo	10,519	33,919 ^{3/}	20,651	- 3,308	+ 5,288 ^{4/}
Bittou	6,824				
Garango	10,215	20,824 ^{3/}	15,089	- 4,874	+ 5,735
Ouargaye	9,030		7,980	+ 1,050	
Zabra	17,583	26,673	16,786	+ 797	+ 9,887
Total	<u>69,214</u>	<u>102,438</u>	<u>82,015</u>	<u>-12,901</u>	<u>+20,423</u>
<u>Centre Nord</u>					
Boulsa	13,406	14,104	20,759	- 7,353	- 6,655
Barsalogho)					
Pissila)	23,440	30,375	21,977	+ 1,463	+ 8,398
Tougouri)					
Korisomoro)					
Boussouma)					
Kaya)	25,734	34,201	55,886	-30,152	+21,685
Mane)					
Tema)					
Kongoussi)	12,170	22,456	29,548	-17,378	- 7,092
Tikare)					
Total	<u>74,750</u>	<u>101,136</u>	<u>128,170</u>	<u>-53,420</u>	<u>-27,034</u>
<u>Volta Noir</u>					
Boromo	25,123	24,280	15,376	+ 9,747	+ 8,904
Dedougou	34,844	37,310	25,171	+ 9,673	+12,139
Solenzo	23,030	24,750	14,985	+ 8,045	+ 9,765
Kougny (Toma)	18,680	20,540	18,902	- 222	+ 1,638
Nouna	26,658	35,650	26,237	+ 421	+ 9,413
Tougan	26,550	37,500	28,203	- 1,653	+ 9,297
Total	<u>154,885</u>	<u>180,030</u>	<u>128,374</u>	<u>+26,011</u>	<u>+51,156</u>
<u>Comoe</u>					
Banfara	16,370	10,955	10,467	+ 5,903	+ 488
Sideradougou	22,920	21,086	5,904	+17,010	+15,132
Sincou	22,255	11,890	10,231	+12,024	+ 1,659
Niangoloko	16,500	10,460	7,112	+ 9,388	+ 3,348
Mangodora	14,700	7,708	1,751 ^{3/}	+12,949	+ 5,957
Kanfiguela	800	1,250		+ 700	+ 1,250
Total	<u>93,489</u>	<u>63,359</u>	<u>35,465</u>	<u>+57,980</u>	<u>+27,594</u>

<u>Dept./ORD</u>	<u>Prod.</u> <u>1980/81</u>	<u>Prod.</u> <u>1979/80</u>	<u>Requirements</u>	<u>Surplus(+)</u> <u>Deficit(-)</u> <u>1980/81</u>	<u>Surplus(+)</u> <u>Deficit(-)</u> <u>1979/80</u>
<u>Est</u>					
Bogande	13,174	25,500	24,898	-11,724	+ 602
Fada	15,757	11,750	22,799	+ 894	- 4,649
Kantchari	7,533	5,800	5,103 ^{6/}	+ 2,430 ^{5/}	+ 697
Matiacoali	7,936	6,400			
Comin Yanga	6,143	7,946	4,891	+ 1,252	+ 3,055
Diabo	7,046	8,500	5,038	+ 2,008	+ 3,462
Diapaga	9,553	15,025	13,557	- 4,004	+ 1,468
Pama	3,431	6,986	6,259	- 2,828	+ 727
Total	70,573	87,907	82,545	-11,972	+ 5,362
<u>Yatenga</u>					
Ouahigouya	15,451	20,237	30,831	-15,380	-10,594
Gourcy	12,423	13,700	23,918	-11,495	-10,218
Seguenega	6,786	12,854	20,836	-14,059	- 7,982
Titao	2,478	9,505	16,568	-14,090	- 7,063
Koumbry	1,050	5,504	7,720	- 6,670	- 2215
Thiou	906	4,608	7,602	- 6,596	- 2,994
Total	39,094	66,408	107,475	-68,381	-41,067
<u>Sahel*</u>					
Dori	15,450		20,886	- 5,436	
Djibo	14,854		20,332	- 5,478	
Gorom-Gorom	7,277		15,173	- 7,896	
Sebba	9,498		9,130	+ 368	
Aribinda	7,072		6,659	+ 413	
Total	54,151		72,180	-18,029	
<u>Hauts-Bassin</u>					
Hounde	28,000 ^{7/}		9,207	+18,793	
Total (ORD)	126,300	121,800	82,581	+43,719	+39,219
<u>Sud Ouest</u>					
Gacua)					
Dano)	84,487 ^{8/}	75,487 ^{8/}	72,487	+12,000 ^{9/}	+ 3,000 ^{9/}
Kamptie)					
Battie)					

^{1/} Data not available for Centre Ouest (Koudougou) and Centre (Ouagadougou).

^{2/} At 180 kgs. per person per year. Population from 1975 census.

^{3/} Included in Tenkodogo.

^{4/} Includes Ouagaye requirements.

^{5/} Included in Banfora.

^{6/} Included in Fada.

^{7/} Discussion ORD Chef de Secteur, part of total.

^{8/} Computed from available surplus.

^{9/} Discussion with Director of the ORD Bourzouiba. This seems extremely low in comparison with figures for Hauts-Bassin and Comoe to the west.

Source: ORD estimates and Ministry of Rural Development estimates for production.

VII. THE CEREALS BALANCE IN UPPER VOLTA

An analysis of the cereals balance in Upper Volta suggests that in seven of eleven years since 1970/71, Upper Volta has been in deficit. With imports and food aid and stock building in the good years of the mid-seventies, the country was close to an overall balance for the period. Table 21 summarizes the cereals balances for those years.

PRODUCTION

Estimates of cereals production vary greatly over the period as can be seen in Table 22. Discussion with ORD officials, who are largely responsible for collecting production data, makes one cautious about the use of these figures. Some attempt is made to take annual yield measurements and estimate acreages in the different crops. However, in all cases, officials stress that these are only estimates. In addition, there does not seem to be a universal method of estimating applied across all ORD's. Further, the methods of estimation do not appear consistent throughout the series. Minor crops may be lumped together with overall cereals production or isolated separately depending upon region or year. In some years data is given for the entire ORD, in others it is detailed by subregions. Therefore, the production data must be viewed, at best, as a global estimate and are probably off by plus or minus 20 percent. Comparison with the price data given in Table 23, again neither systematically nor

TABLE 21

CEREALS BALANCE, UPPER VOLTA, 1970/71-80/81
(Thousands of Metric Tons)

<u>Year</u> ^{1/}	<u>Production</u> ^{2/}	<u>Seed</u> ^{3/} <u>and</u> <u>Loss</u>	<u>Available</u>	<u>Consumption</u> ^{4/} <u>Needs</u>		<u>Deficit (-)</u> <u>Surplus (+)</u>	<u>Imports</u> ^{5/} <u>and AID</u>	<u>Balance</u> <u>(+) (-)</u>
70/71	922	55	867	844	917	- 50	26.8	- 23.2
71/72	857	51	806	909	934	-128	25.1	-102.9
72/73	838	50	788	934	954	-166	40.1	-126.0
73/74	823	49	744	960	974	-200	98.9	-101.1
74/75	1,101	66	1,035	987	993	+ 42	25.9	+ 67.9
75/76	1,223	73	1,150	1,015		+135	28.6	+163.6
76/77	1,166	70	1,096	1,043	1,035	+ 61	54.4	+115.4
77/78	1,058	64	994	1,073	1,056	- 62	63.3	+ 1.3
78/79	1,116	67	1,048	1,103	1,077	- 29	58.0	+ 29.0
79/80	1,196	72	1,124	1,133	1,099	+ 25	60.0	+ 85.0
80/81	1,019	61	958	1,165	1,121	-163	65.9	- 97.1
						<u>-535</u>	<u>546.9</u>	<u>+ 11.9</u>

^{1/} OFNACER year: October 1 to September 30; crop year: May 1 to April 30.

^{2/} Grown in lower year, harvest: September-December. From Table 22.

70/71-76/77 - Source 1, Table 22.

77/78-78/79 - Source 3, Table 22.

79/80 - Source 5, Table 22.

80/81 - MBR, UV, and Multidonor Mission (FFP Offices, USAID/UV), June 1981.

^{3/} 3.5% storage loss, seed: 10 kgs./ha., ha.'s based on 400 kg. average.

^{4/} 180 kgs. per capita, population estimated with 2.0% growth rate from 1975 census.

^{5/} 71-78 estimates from Barbara Huddleston, International Food Policy Research Institute, Washington, D.C., 79-80 estimates based on OFNACER's stock flows; 80/81 from multidonor mission (FFP Offices, AID/UV).

TABLE 22

CEREALS PRODUCTION, UPPER VOLTA, 1970/71-79/80
After Pierre Thenevin (Thousands Metric Tons)

	<u>70/71</u>	<u>71/72</u>	<u>72/73</u>	<u>73/74</u>	<u>74/75</u>	<u>75/76</u>	<u>76/77</u>	<u>77/78</u>	<u>78/79</u>	<u>79/80</u>	<u>80/81</u>
<u>Source 1</u>											
Millet-Sorghum	833	722	766	750	1,000	1,100	1,087	-	-	-	-
Mafa	55	66	38	42	62	84	46	-	-	-	-
Paddy	34	37	34	31	39	39	33	-	-	-	-
Total	933	857	838	823	1,101	1,223	1,166	-	-	-	-
<u>Source 2</u>											
Millet-sorghum-mafa	833	772	766	750	810	1,205	977	-	-	-	-
Paddy	34	37	34	31	39	48	45	-	-	-	-
Total	867	809	800	781	849	1,253	1,022	-	-	-	-
<u>Source 3</u>											
Millet-sorghum-mafa			837	793	1,045	1,205	940	1,058	1,116		
<u>Source 4</u>											
Total cereals	1,041	1,052	871	843	1,193	1,257	1,107	1,018	-	-	-
<u>Source 5</u>											
Total cereals	-	-	-	-	-	-	-	-	1,157	1,196	
<u>Source 6</u>											
Total cereals	-	-	-	-	-	-	-	-	-	-	1,019

Source 1: Etude Du Gerdat "La Situation alimentaire dans les pays en developpement associes." Min. de la Cooperation, SEQI, Sept. 1978.

Source 2: Etude, Min. de la Cooperation, SEQI, Colette TROUVE-BRESSAT, Oct. 1978.

Source 3: Min. de la Cooperation, Etudes Du SEQI, Par Pays, H.V., Nov. 1979, Min. Dev. Rural.

Source 4: FAO annuelle de la production, Colloque du Nouakchott, 1979 (CILSS).

Source 5: Estimate du CILSS, Pour evaluate aid, 79/80.

Source 6: Ministere de la Developpement Rural, and CILSS for estimating aid 80/81.

Sources 1-5: Cited in Pierre Thenevin, L'AIDE Alimentaire En Cereals Dans Les Pays Sahelienne, Ministere de la Cooperation, Sept. 1980.

TABLE 23

CONSUMER GRAIN PRICES ON THE OUAGADOUGOU MARKET

	<u>Official Prices^{1/}</u>		<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>
	<u>Consumer</u>	<u>Producer</u>												
1973	26	14	-	-	-	-	-	45	-	-	62	51	30	36
1974	30	18	37.5	39	39	39	39	48	46.5	43	36	35	30	30
1975	37	22	30	30	30	-	27	27	27	-	26	27	27	30
1976	30	18	27	28.5	28	28.5	30	-	-	-	-	-	-	-
1977	35	23	44	50	50	49	55	72	-	80	-	80	67.5	75
1978	45	32	70	-	-	-	-	-	-	-	-	-	-	-
1979	57	40	-	-	-	-	-	-	-	-	-	-	-	-
1980	68.5/60.5	45/37 ^{2/}	-	-	-	-	-	-	-	-	-	-	-	-
1981	70/65	45/37 ^{2/}	-	-	-	-	-	-	90-153 ^{3/}	-	-	-	-	-

Source: Pierre Thenevin, 1973-1978, Author, 1981 (Thenevin notes producer prices offered by private merchants varied between 15-27 FCFA in 1973 and 18-35 FCFA in 1974.)

^{1/} Prices usually those set at end of growing season in previous year.

^{2/} white sorghum, pearl millet, and corn are higher than red sorghum.

^{3/} Prices varied by commodity and quantity bought, purchases were made of millet, white sorghum, red sorghum, corn, and polished rice.

scientifically collected, suggests that the general production levels may be reflected. Certainly the high production levels in the 1974/75-1976/77 period shows some relationship with the lower prices noted in that period. Likewise, July-August prices were very high (in Ouaga as well as other parts of Upper Volta) which would be reflecting a low production year in 1980/81.

SEED AND LOSS

These estimates are made on the basis of 3.5 percent loss in storage of total production and seed requirements of ten kilograms per hectare planted. Acreage is based on a simple 400 kilogram per hectare yield that gives total production. The former loss estimate was made by a Kansas State University mission that looked into traditional storage. Most experts would probably concur for Upper Volta. One problem arises with the point at which losses are estimated. Some estimates start with the standing crop and compare that with consumable grain. In this case, we have assumed a granary in-out comparison. The actual amount used for seed will vary with the type of crop (size of seed), density of planting, and frequency of replanting. The MDR estimates that at about 155,000 tons for 1980/81 and the multidonor mission at 100,000.*

CONSUMPTION NEEDS

For consumption, the population figures were the 1975 census figures of resident population. This was assumed to have grown at 2.0 percent throughout the period. This method allows about 98,552 more resident population in 1981 than is used by the government.

*USAID - Memo Christine Brown, FFP monitor, June 4, 1981.

Per capita consumption was based on 130 kilograms of whole grain. This figure makes no adjustments for rural-urban consumption patterns, income relationships, regional differences, or ethnic variations. Also income and price elasticities have not been measured. Therefore, this can be only at best a very rough estimate.

IMPORTS AND FOOD AID

Both categories are suspect, but are generally from FAO data. First, it appears that no account has been made for unofficial or clandestine imports from neighboring countries. These have been substantial in some years when large price differentials existed across borders. Food aid appears not to have taken into account the various feeding programs such as that run by CATHWEL, although it obviously contributes to the overall balances.

OTHERS

Finally, Table 21 does not include in consumption figures livestock and industrial uses which the government estimated at 15,000 tons in 1980/81. Given that there are no available studies to indicate elasticities for the meat/cereal price ratios, it is difficult to make estimates. It seems unlikely that much grain (other than by-products) were fed to livestock with cereals over 90 FCFA per kilogram on parallel markets in 1981.

With the drought of the early seventies and the continued shortage to cereals, food aid became an important part of meeting cereals needs in Upper Volta. In order to handle this donated grain, as well as to facilitate marketing of locally produced grain,

OFNACER had as its mandate to encourage production by offering a remunerative price to the farmer, determine prices that took into account low buying power, and stabilize the price for cereals from one harvest to the next. Finally, OFNACER was to establish security stocks during good production years to protect the country during years of low production.

VIII. MARKETING EXPERIENCE IN UPPER VOLTA

The Government of Upper Volta has undertaken marketing of agricultural products with several different approaches. These various policies reflect problems the government has had with marketing rather than any inherent shift in ideology toward government involvement in the marketing system. It is clear that the government has always felt that it must undertake marketing in the agricultural sector. It has never been stated that this general policy was to capture any "surplus" generated in this sector. Rather, the policy derives from an often-stated assumption that the non-government marketing sector enjoys huge profits that it extracts from producers and consumers alike. This attitude is reflected in the approaches taken to marketing since 1968/69 and the evolution to the present position of OFNACER. Two periods are distinguished: the 1968/69-1972/73 period when marketing was exclusively cash crops; and the 1973/74 to present period when cereals marketing received increasing attention.

1968/69: Purchasing monopoly given to the ORD's*, generally by the statutes creating the ORD's. This was reported a failure as the ORD's were not able to capture a large part of the market.

*ORD, Organisme Regional de Developpement.

- 1969/70: The purchasing monopoly was contracted to merchants for a set margin. This system appeared difficult to control.
- 1970/71: Merchants bought a license to purchase for an established fee (50,000 FCFA). This system was reported disadvantageous to the ORD's who needed marketing profits for their operations.
- 1971/72: Principle of monopoly was abandoned in favor of direct competition between ORD's and merchants. ORD's generally could not compete.
- 1972/73: Marketing given over entirely to merchants.

During this period of "cash" crop marketing, the monopsony approach was attempted and finally abandoned. Enforcement of a monopsony market was left exclusively to the ORD's. At the national level, the government agencies responsible for exporting products made no attempt to limit their buying exclusively from the ORD's. In fact, they usually treated the ORD's as just another merchant and gave the ORD's target prices, but no purchase contracts. From about 1973/74, cereals marketing entered the picture.

- 1973/74: The ORD's were given the monopsony to buy cereals from the producers and OFNACER was given the monopoly to sell to consumers. The ORD's were required to sell only to OFNACER. However, OFNACER was under no obligation to buy from the ORD's. In Yatenga ORD, for

example, the ORD bought 667 tons of grain but could only resell 300 tons to OFNACER.* OFNACER continued to buy from merchants, therefore, undercutting the ORD's attempts to establish a monopsony.

During the 1973/74 to 1976/77 period, OFNACER advanced funds to the ORD's to buy cereals. Repayments on delivery of cereals often were not made. For example, the 1978 OFNACER budget notes that accounts receivable (or debts owed to OFNACER) were 601,966,998 FCFA, of which 492,200,219 were owed by the ORD's and were doubtful.** By the 1979-80 annual report, these had dropped to 553,366,521 FCFA with ORD's owing 482,847,759 FCFA.*** In the minutes of the meeting of the Council of Administration (Directors Board) of August 23, 1979, it was noted that these dated from 1975 and, in certain cases, debts were owed by firms that were no longer in existence. The Commissioner of Accounts**** was named in 1978, and there had been no financial controls since 1973.*****

*BARA report, March 1976, "Situation Actuelle De l'ORD Du Yatenga."

**\$5,009,835 and \$2,461,001 @ 200 FCFA = 1\$ U.S., 1978 rates.
\$2,188,971 and \$1,789,819 @ today's rate of approximately 275 FCFA = 1 U.S. dollar.

***\$2,769,532 and \$2,414,259 @ 200 FCFA to 1\$ U.S., \$2,014,060 and \$1,755,310 @ 275 FCFA to 1\$ U.S.

****Commissaire aux Comptes.

*****Proces-Verbal De la Reunion Du Conseil D'Administration De L'Office National Des Cereales (OFNACER), August 23, 1979.

During the period 1973-1977, OFNACER operated under the Ministry of Commerce. In 1978, OFNACER was placed under the Ministry of Rural Development. The buying policy of OFNACER was changed in 1978 in favor of a more direct approach. Probably due to the enormous debt incurred when working through the ORD's, OFNACER decided to buy through its own agents or contract with merchants and village groups.

1978/79:* Direct buying. Goal was set at 30,000 tons which would be used equally for long-term security stocks and price stabilization. OFNACER planned to buy 8,720 tons direct and contract with merchants for 21,280 tons. Sixty-five buying centers were established. The actual results of the season were 15,285 tons 063 kilograms bought divided as follows:

7,074,170	OFNACER agents
4,092,501	Village groups
2,865,631	Non-contract merchants
<u>1,252,761</u>	Contract merchants
15,285,063**	

1979/80:*** Direct buying with heavier emphasis upon OFNACER agents and less on merchants:

*OFNACER, Campaign de Commercialisation, 1978-79.

**Report has errors, totals 15,285,063.

***OFNACER, Campaign de Commercialisation, 1979/80.

Tons

20,000	OFNACER agents
5,000	Village groups
<u>5,000</u>	Contract merchants
30,000	

OFNACER assembled a list of 97 merchants from the previous year and 9 new merchants and asked them to enter into contract to deliver grain. Contracts offered a 2 FCFA/kilogram commission for buying and a 2 FCFA fee for transporting to nearest OFNACER warehouse. No responses were received.

Meetings organized in Ouagadougou and Bobo Dioulasso with merchants finally led to 5 contracts for 8,100 tons.

OFNACER established 79 buying centers.

OFNACER was able to buy only 9,054,260 kilograms of grain broken down as follows:

6,852,601	OFNACER Agents
2,073,694	Village groups
<u>127,965</u>	Contract merchants
9,054,260	

For the most part, OFNACER blamed the poor results of 1979/80 on financial problems of the agency and high farm gate prices. However, they did note that part of their objectives were met in that the producer received a just price for his efforts.

1980/81: Heavy emphasis upon direct buying and buying through village groups.

Planned 1980/81

OFNACER agents	5,250 tons
Village groups	24,750 tons
Contract merchants	<u>10,000</u> tons
	<u>40,000</u> tons

OFNACER established 25 buying centers.

The results were generally abysmal. Although final reports were not available for the entire season, total purchases were approximately 2,500 tons of cereals. Many areas of the country where grain purchases had been good in recent years contributed nothing in 1980/81. Contract merchants reportedly totaled 15 in January 1981.

The OFNACER Report of February 23, 1981 gave the breakdown by commodity as shown below, but did not give the breakdown by buyer.

1980/81 Buying Campaign

<u>Commodity</u>	<u>Kilograms</u>
White sorghum	1,533,574
Red sorghum	73,470.5
Millet	119,557
Mais	417,289
Niobe (cowpeas)	3,000
Paddy rice	<u>68,859.5</u>
Total to 2/23/81	<u>2,215,550.0</u>

The above description of the government's involvement in marketing is both brief and incomplete. Almost no study was given to the functioning of non-grain markets. Brief discussions with various officials and technicians indicate that markets having a unique internal demand or only export demand, such as cotton or rice, which require processing available only to the government, can operate under strong government control. Markets which have high and diverse internal demand, but which require special handling and transport, such as grain and vegetables, can be controlled only through the transport network, but then at high cost and loss of efficiency. The livestock market is virtually uncontrollable.

This does not mean that the government has relinquished its desire to control these markets. The fact that monopsonys and monopolies are no longer promoted results from past failures at complete market control. It is probably fortunate that these attempts did fail. Had they been successful, market distortions would probably be even greater than sometimes appears at present.

For example, contract merchants were to agree not to do marketing outside of the dates of the market season fixed by the government or to move or transport produce outside of the Department in which they had authorization to buy. It was never made clear what producers were to do when they needed money outside of the buying season. It was also unclear how the government would determine the allocation of grain to markets throughout the country.

A commission established by the Ministries of Commerce and Rural Development to look at grain marketing notes most of these problems.* They further note that the private sector is always ahead of OFNACER in buying grain due to the merchant's long establishment in the villages, his methods of credit, his early entry into the market (presumably soon after harvest), etc. They further note that OFNACER is beaten by the competition and, therefore, controls only a very small part of the market.

The Commission followed the recommendations made by the Council of Ministers of CILSS,** in which they renounced a move to monopolization and supported using all economic agents in marketing. There is, however, a note that the prices are uncontrollable in the large urban centers "because of intimidation by the merchants" and "situation of insecurity by agents of the price control service." Therefore, they note that there is insufficient information on quantity marketed, on the supply at markets, as well as the fluctuation of cereals in time and space to develop a valid cereals policy.

The Commission made several recommendations that they felt would improve the cereals market in Upper Volta. The most significant points bearing on the structure of the market were:

1. All merchants, village groups, cereal banks, and OFNACER must report on stock holdings.

*Rapport Relatif a la Commercialisation Des Cereals, January, 1981.

**CILSS, Colloque de Nouakchott, July, 1979.

2. A percentage of all stock holdings would be turned over to OFNACER.
3. Prices would be fixed including:
 - . producer floor price;
 - . price delivered to OFNACER; and
 - . consumer ceiling price.
4. Price controls would be enforced with police/military assistance.
5. Contracts for grain deliveries with OFNACER would be enforced.
6. The population would be asked to report grain hoarders.

The recommendations demonstrate the continuing problem that the government has had with marketing due to the total lack of information on the market and the failure to understand the structure of that market; a movement to market control is proposed. However, given the past failures at market control, there is no reason to expect this attempt to succeed.

Merchants are generally suspicious of government agents and forms, and with the threat of having to turn over part of their stocks to OFNACER, it is doubtful if any stocks would be reported. Enforcement of fixed prices in the past has generally led to market distortion and usually shortages and high blackmarket prices.

The concept of hoarding, always advanced as the problem when prices rise, plays on the devil theory of private merchants. The fact that the people may buy and store grain hoping for profits from price rises does not necessarily constitute undue exploitation. If this type of speculation were large as a percentage of the total market movement, it would most likely have a moderating effect on price movements.

For OFNACER to carry out the mandate given it, it is absolutely essential that they understand the structure of the market they are trying to influence and the economic forces operating in that market. Without this understanding, any success from policy decisions on market prices and supplies will be only coincidental. It appears that at this point, the debate on the degree of control and direction of influence that OFNACER should take has not ended.

In a May 1981 report from OFNACER, a five-year program was laid out for OFNACER's market intervention.* The report reiterated the mandate given to it by the government, viz:

- . Establish a guaranteed buying price to the producer to encourage increased cereals production, and

- . stabilize cereals prices for the consumer at a level which takes into account the low buying power of rural and urban populations.

*OFNACER, MDR, Fiche Technique De Project, "Programme De Commercialisation Des Cereals et De Stabilisation Des Prix En Haute Volta," May 1981.

With these goals in mind, OFNACER's main objectives are:

1. Transferring grain from surplus to deficit areas.
2. Ease problems of "scudure" between harvest by assuring supplies in urban centers.
3. Assure stable prices of cereals in consumer markets, and
4. Build a national stock for emergency.

OFNACER argued that they needed to handle 60,000 tons of cereals per year to stabilize prices. Therefore the program for the next five years was to progressively increase local purchases as follows:

1981-82	30,000 tons
1982-83	40,000 tons
1983-84	40,000 tons
1984-85	50,000 tons
1985-86	50,000 tons.

The entire project, estimated to cost 6,059,500,000 FCFA,* called for farm gate prices to rise from 50 FCFA/kilogram in 1981-82 to 60 FCFA/kilogram in 1985-86. Sale prices would rise from 75 FCFA/kilogram in 1981-82 to 101 FCFA/kilogram in 1985-86. Subsidies on OFNACER's operating costs were to decline from 7 FCFA/kilogram in 1981-82 to zero in 1985-86.** Annual marketing cost

*\$22,054,545 at 275 FCFA to 1 U.S.

**The reason for subsidizing OFNACER's operations is in part because the price commission recognizes OFNACER is not efficient and in part because OFNACER argues it is establishing an organization to handle at least 60,000 tons of grain; so its fixed costs are high at the outset.

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increases, using the 1980-81 base, are 10 percent, 10 percent, 4 percent, 4 percent, and 4 percent, with the cost of sacks rising 10 percent per year. The cost factors, although somewhat suspect in relation to 1979-80 costs, are probably reasonable if grain volumes reach targeted levels. However, no explanation is given for arriving at the farmgate price levels, nor the ability of those levels to attract grain in the quantities targeted. For example, in a study conducted in 1979-80 in the Manga region south of Ouagadougou**, market prices at rural villages seldom were lower than OFNACER producer prices and were higher than OFNACER consumer prices more than 50 percent of the time. Table 24 summarizes the raw data from that study relative to OFNACER prices.

It is not surprising that Sherman notes that OFNACER came to the market and tried to buy one day each in 1979 and 1980, didn't buy anything, and left the next day. More critical, probably, is the fact that in over 50 percent of the observations of 1979/1980, the market price was above OFNACER targeted producer prices for 1985-86.

Although Sherman warns not to extrapolate from her study to the whole country, given the paucity of information on grain marketing in Upper Volta, it probably offers some insights into

*Jacqueline R. Sherman, "Crop Disposal and Grain Marketing in the Manga Region of Upper Volta - A Case Study," CRED, University of Michigan, February 1981, preliminary report.

The price data was collected from September 1979 to September 1980 in six markets over a period of 50 weeks. It should be noted that rural markets in Upper Volta function both as producer and consumer markets.

TABLE 24

PRICES ON SIX VILLAGE MARKETS IN THE MANGA REGION
RELATIVE TO OFNACER PRICES, 1979-80 1/

	<u>OFNACER Prices</u>		N= ^{2/}	<u>No. Observations^{3/}</u>	
	<u>Producer FCFA (Kg.)</u>	<u>Consumer</u>		<u>Above Consumer</u>	<u>Below Producer</u>
White sorghum	40 ^{4/}	57 ^{5/}	283	162	4
Pearl millet	40 ^{4/}	57 ^{5/}	263	169	3
Red sorghum	32 ^{6/}	50 ^{7/}	250	178	2

^{1/} Data collected September 1979 to September 1980.

^{2/} Six markets weekly for 50 weeks, some observations missing or no crop sold.

^{3/} Number of weeks prices were above or below OFNACER prices.

^{4/} Producer prices raised to 45 FCFA late in 1980.

^{5/} Consumer prices raised to 70.0 FCFA late 1980.

^{6/} Producer prices raised to 37 FCFA late 1980.

^{7/} Consumer prices raised to 62.0 FCFA late 1980. All 1980 prices should have affected prices only after November 1980.

Source: Jacqueline Sherman.

the market OFNACER is attempting to regulate. Sherman identifies six types of traders operating in the village markets of the Manga region.* These are:

1. regional traders;
2. middlemen;
3. large bush traders;
4. assemblers;
5. peasant/traders; and
6. government traders.

Regional traders buy and sell in the regional markets, storing grain in a warehouse at the market between market days. Often they deal in more than one commodity. No more than ten operated in the Manga market.

Middlemen buy on market day on their own account or for Ouagadougou collectors. They are usually farmers who devote two days per week to trading. They never store grain.

Large bush traders are similar to regional traders, but usually operate, often as the sole trader, in bush markets.

Assemblers come from Ouagadougou to buy on market day. Some have warehouses, but most ship grain on their own trucks or on bush taxis to Ouagadougou on the day of the market. They buy from the middlemen exclusively, whom they sometimes finance. Each has his own clients.

*Sherman, pp. 45-46.

Peasant/traders buy grain to store for resale prior to the next harvest. Only one or two existed in each of Sherman's study villages.

Government traders (commercant agreeer or contract merchants) buy through a formal agreement with the government. There were none for grain in Manga.

Sherman suggests that although entry into the market is relatively easy, when large traders enter the market, "the market is in fact monopsonistic or oligopsonistic."* This conclusion is arrived at primarily by her observation of an ad hoc price fixing on a given market day. However, she notes that irregular traders, traders outside the market, speciality buyers, and quality buyers, alter those prices.** Actually, her discussion of the markets and comments from principles in the market suggest a highly competitive structure. The main influence on prices appears to be the Ouagadougou market, and price discounts for transport and handling seem to dictate the local market prices. Farmers appear willing to transport grain to more distant markets if they feel the price spread is greater than transport costs.

Although definite conclusions must await Sherman's more sophisticated econometric analysis, the Manga market appears to have many of the elements of other West African grain markets. Although there appears to be some collusion at the regional and

*Sherman, p. 51. However, she did not exactly identify "large trader."

**Sherman, p. 55-56.

larger markets* between traders, it is probably at best only short-term price fixing. The real determination of price is still the large urban markets. Long-term speculative storage appears to occur only by village farmers. Other storage appears to be short-term, probably no more than a week or two, so that pipeline grain from producer to consumer is probably relatively constant. These observations would be supported by examining the Ouagadougou market. First, grain is always of excellent quality in the city markets. Given the high degree of insect infestation of off-farm stored grain in Upper Volta, the lack of such infestation suggests the grain has only recently left farm storage. Second, the volume of grain in Ouagadougou, as well as other urban markets in Upper Volta indicates that price was regulating flows of grain, not arbitrary decisions to hoard grain for price manipulation.

*Price determination at U.S.-country grain markets is little different. Prices are dictated by national cash and futures grain markets, and there is little difference in prices offered from one buyer to the next.

IX. FARMER MARKETING DECISIONS

Virtually no study has been done of the decision-making process of farmers relative to their grain sales. Some tentative work has been undertaken on a very general scale concerning farm storage, but it is not of adequate quality to generalize nationally. Sherman's more detailed forthcoming analysis should give some insights into farmer behavior for one area of Upper Volta, but more detailed work is obviously needed, particularly for the Mossi plateau and for the west and southwest parts of the country. Therefore, these comments are general, and are drawn from a large number of sources and discussions in Upper Volta.

The most thorough study of the structure of the rural economy in Upper Volta was undertaken by ORSTOM as a part of an overall examination of labor migration by the Mossi.* Of particular interest is the work of Gerard Ancey** covering rural households in the regions of Koudougou, Yako, Zorgho, Tougan, and Dedougou. This study, unfortunately covers only the Mossi plateau and Mossi colonists in the Dedougou area.

As can be seen in Table 25, cereals play an important role in the household budget. However, wide discrepancies are noted between regions. This large difference is generally explained by the availability of land to produce cereals and the other sources of income of the household. In the most densely populated zones, such as Yatenga, western Kaya, northern Koudougou, income from cereals is low and the expenses for cereals are high.

*ORSTOM, Enquete Sur les Movements De Population a Partir Du Pays Mossi, 1975.

**ORSTOM, Ibid., Vol. III, Gerard Ancey, "Milieux Ruraux Mossi Aspects Economiques.

TABLE 25

THE ROLE OF MILLET AND SORGHUM IN THE
COMPOSITION OF HOUSEHOLD BUDGETS
(Percentage)

	<u>Expense (Total)</u>	<u>Receipts (Total)</u>	<u>Expense^{1/} Commercial</u>	<u>Receipt^{1/} Commercial</u>	<u>Margin Commercial</u>	<u>Final^{2/} Expense</u>	<u>Final Receipt</u>
Koudougou	17.75	7.44	55.45	16.49	-33.81	10.01	3.89
Yako	2.03	16.00	1.59	-0-	- 6.59	2.74	22.77
Zorgho	10.81	2.07	22.09	2.1	-111.88	6.67	2.01
Dedougou	9.33	9.47	8.13	8.32	+ 9.44	10.30	10.37
Tougan	20.43	9.45	12.73	12.22	+10.29	29.18	5.87

^{1/} Commercial designates commodity was bought or sold for commercial profit or was transformed.

^{2/} Final indicates commercial was subtracted from total before calculating percentage.

Source: Ancy (ORSTOM).

TABLE 26
AVERAGE REVENUE PER FARM (EXPLOITATION)
FOR VARIOUS REGIONS OF UPPER VOLTA BY SOURCE OF REVENUE
(FCFA)

	<u>Yatenga</u>	<u>Kaya</u>	<u>Koudougou</u>	<u>Ouagadougou</u>	<u>Koupela</u>	<u>Bissa</u>	<u>Together</u>
Cereals	900	3,600	2,100	6,700	3,400	6,900	4,100
Gardening	1,000	3,900	2,400	2,400	1,700	2,600	2,400
Cash Crops	500	3,300	2,100	2,100	2,600	900	2,100
Livestock	9,500	7,100	6,500	3,600	3,500	5,200	5,700
Crafts	<u>3,200</u>	<u>2,300</u>	<u>1,100</u>	<u>700</u>	<u>1,600</u>	<u>400</u>	<u>1,600</u>
Total	<u>15,000</u>	<u>20,200</u>	<u>14,200</u>	<u>15,500</u>	<u>2,800</u>	<u>6,000</u>	<u>15,900</u>
Ave. Exp. for Cereals	6,600	3,600	2,800	1,700	1,600	1,800	2,900
Taxes	3,500	3,000	2,200	2,500	2,600	2,600	2,800
Proportion of Farms Paying taxes with Labor Migration Revenues (%)	51	10	30	13	13	10	17
No. of Migrants Absent per Farm	1.21	.64	1.32	.73	.61	1.08	.88

Source: ORSTOM, Vol. II.

These are also the areas which contribute the highest number of migrant workers.

Although the CRSTOM studies are now almost a decade old, the structure of receipts and expenses is probably not drastically different today. Kaya appears to be, in general, more of a deficit producer today, an observation supported not only by OFNACER cereals sales in Kaya, but by the rapid disappearance of cash crops in the Department. The structure also supports our comments made elsewhere about intra- and inter-village cereals movements as well as intra-Department movements. Ouagadougou, though appearing as a net producer if individual farm revenues are aggregated, undoubtedly has net production similar to Bissa in the south and net deficits of cereals in the north near Yatenga. The same will hold true for Koudougou.

Given the tremendous upward movement in prices for cereals in the past decade, one would have expected farmers to produce more cereals for market and a shift in the general structure of farm incomes. This does not appear to have happened. What has happened over the past two decades is an out-migration from the densely populated Mossi plateau, both for employment on the coast and to less densely populated lands. In the decade up to 1975, for every 100 families relocating on new lands, 75 relocated within Mossi country, 15 went to the northwest and 7 to the southwest, only 3 moved east. This, however, seems to be somewhat distorted. During the 12-year period, 1961-73, movement outside Mossi country was rare, but became predominant in the early 1970's. This is evident today below the Ouagadougou-Bobo Dioulasso

road where several new Mossi villages exist in non-Mossi country. The movement has become so intense that Marchal describes it as "no longer a migration, it is an exodus."* The out-movement of people from the Mossi plateau is probably just keeping pace with population growth. However, given that some areas have over 30 percent of the male workforce between the ages of 15-44 gone, agricultural production suffers from lack of labor. Given the low level of technology and capital investment, it has meant food production has not kept up with food needs, hence there is an increased need to shift food to these areas and further out-migration.** For example, the relationship of insufficient food production to out-migration can be compared in the 1971-72 ORSTOM study. (See Table 28.) The sample study for this area, as seen in Table 27, indicates that 59 percent of farms buy cereals while 32 percent sell cereals, and 15 percent both buy and sell cereals, while 24 percent do neither.

TABLE 27
PERCENT OF FARMS THAT BUY AND SELL CEREALS

<u>Buy</u>	<u>Sell</u>		<u>Total</u>
	<u>Yes</u>	<u>No</u>	
Yes	15	44	59
No	<u>17</u>	<u>24</u>	<u>41</u>
Total	<u>32</u>	<u>68</u>	<u>100</u>

Source: Boutillier, ORSTOM, 1975.

*J. Y. Marchal, "Geographie des aires d'emigration," ORSTOM.

**Boutillier, ORSTOM.

TABLE 28

NUMBER OF FARMS WITH ADEQUATE FOOD PRODUCTION
AND PERCENT OF LABOR MIGRATION OF MALE WORK FORCE

<u>Harvest Sufficient</u> ‡	<u>Yatenga</u>	<u>Kaya</u>	<u>Koudougou</u>	<u>Ouagadougou</u>	<u>Koupela</u>	<u>Rissa</u>	<u>To</u>
Yes	43	28	49	36	31	39	37
No	33	21	42	29	26	35	32
Percent of Migration of Male Labor Force							
<u>Age 15-44</u>	43	28	49	36	31	39	37
Age 15-59	33	21	42	29	26	35	32

Source: ORSTOM.

Evidently those farmers who sell but do not buy cereals are the surplus producers (17 percent). Those who buy but do not sell (44 percent) are deficit producers. Those who neither buy nor sell are probably close to self-sufficiency, while those who both buy and sell can be either speculating or exchanging one type of cereal for another.

It is likely that as farmers from the densely populated areas colonize available lands to the west, south, and east, cereals production will increase. This was evident in Ancy's work above relative to the Dedougou region. However, it is evident that farmers prefer to meet cash requirements from other sources and, therefore, cereals sales in the short-run probably will only rise if unusually good harvests occur. In the longer run, cereals production will probably increase only if the returns to labor in its production can compete with cash crops or labor migration.

It is normal for farmers in the Sahel to attempt to reduce the risk of cereals shortages by maintaining on-farm stocks. There is, therefore, a built-in reluctance to sell stocks if cash requirements can be met elsewhere. Unfortunately, no information exists to determine what those desired levels of stocks should be. Some evidence from Niger indicates that farmers were willing to maintain at least one year's food requirements in on-farm stocks. When their on-farm stocks decreased, they were reluctant to sell cereals even in the face of tremendous price increases for cereals.* It would be surprising if Voltaique

*Niger, Ag. Sector Assessment, USAID, 1979., Vol. II.

farmers did not have similar behavior. If this is true, then only with several consecutive years of high production levels will volumes marketed show any great increases.

The MDR estimated on-farm stocks at 50,000 tons in early 1981. This represents less than 5 percent of annual production levels and requirements. Although this figure seems extremely low, it is probably relevant given the recent years of production deficits. Thus, high farm gate prices should be expected for several years as farmers attempt to rebuild stocks. Some areas, with good rainfall may have adequate production from which on-farm stocks have been building. This would allow some regions to market cereals. However, it would be expected that private grain traders will bid up farm gate prices in the face of overall lower national market supplies, thus, effectively cutting OFNACER out of the market. OFNACER's declining market share over the past three years seems to substantiate this argument. In other words, the major problem is inadequate supply due to the low level of technology, poor rainfall, and falling productivity in certain regions. Price incentives can have only minimal effects on production volumes in the face of these constraints. Even with production increases rising faster than consumer requirements, demand from neighboring countries will mitigate against softening of prices. Therefore, OFNACER should only expect to purchase large volumes in abnormally high production years, and then only in regions where previous years' crops have been adequate to permit on-farm stock buildup.

X. OFNACER INFLUENCE UPON PRICES

It is difficult to evaluate the impact that OFNACER has upon prices. Prices have not been collected systematically on the open market, and the structure and volumes of this market have been little studied. The limited data shown in Table 23 would suggest that OFNACER has set official prices* below the Ouagadougou market prices in all but two years since 1973. In 1975, its prices were considerably over the market price, and it lowered those prices in 1976 to more closely correspond to market prices. Although little recorded price data was available, discussions with various officials and foreign specialists suggest that consumer prices have risen spectacularly since 1977 and are consistently above OFNACER prices even though those prices have risen steadily throughout the decade. In fact, one study undertaken in villages south of Ouagadougou** suggests that producer prices are often as high as OFNACER's consumer prices.

A major problem in evaluating OFNACER's impact on the consumer market is the lack of information on the volume of grain entering the commercial market. However, it is clear that two large groups are usually major consumers with inadequate production. Those are urban populations and northern populations. If we added only the larger urban areas of the southern and central parts of the

*Prices are actually set by a government commission with an upper limit on consumer prices, reflected as official price.

**Jacqueline R. Sherman, "Crop Disposal and Grain Marketing in the Manga Region of Upper Volta - A Case Study," provisional report, February 1981, CRED, University of Michigan. See also section on "Marketing Experience in Upper Volta."

country (Ouagadougou, Bobo Dioulasso, Banfora, Koudougou, Dedougou, Tenkodogo) and, assuming they have a growth rate approximately equal to the population growth rate of 2.0 percent per annum in 1981, their urban areas would have a population of about 450,000 persons. Further, assuming that they consumed cereals at the national average and that they were 50 percent self-sufficient, a market of over 40,000 tons would be required to meet urban needs.* The northern areas, especially the Departments of the Sahel (Dori), Nord (Ouahigouya), and Centre Nord (Kaya) are generally not self-sufficient in cereal production. In bad to poor years, these areas are probably no more than 70 percent self-sufficient by national averages. Thus, with their combined current populations of around 1,700,000 inhabitants, these areas could be short up to 90,000 tons of cereals.*

Even in the generally self-sufficient areas such as Est (Fada), Centre (Ouagadougou), Centre Ouest (Koudougou), and Volta Noire (Dedougou), intra departmental shortages often occur. Finally, throughout the country, smaller urban centers in the 3,000 to 8,000 population range, such as Gaoua, Po, Koupela, Nouna, Zabre, Kombissiri, etc., enough non-producers exist to create a lively commercial market. These may be urban consumers such as government employees, laborers, and artisans, or rural consumers such as livestock raisers. Add to this significant transactions made for local

*Actual growth rate may be considerably greater for some of the areas than 2.0 percent, notably Bobo Dioulasso and Ouagadougou. Consumption patterns would tend to be more skewed toward wheat and rice, more expensive cereals, and higher incomes would be offset by greater consumption of red meat, fish, and poultry. For the largest urban centers, 50 percent self-sufficiency is greatly understated.

**See Table 20.

processing (local beer, cakes, etc.), adjustments to stocks and shifts due to commodity exchanges (sorghum for rice or corn, for example). One, therefore, has a picture of a large commercial market. Summarizing possible transactions, we can estimate some high-low possibilities of grain movements:

	<u>Low</u>	<u>High</u>
Large urban	40,000	60,000
Inter-departmental	60,000	90,000
Intra-departmental	30,000	60,000
Small urban	20,000	40,000
Intra-village, local	<u>5,000</u>	<u>10,000</u>
	<u>155,000</u>	<u>260,000</u>

Realizing these are at best only rough estimates, the commercial grain trade ranges from 15 percent to 25 percent of the annual production. Such figures compare well with estimates made in neighboring Sahelian countries.* At recent market prices of 90 FCFA/kilogram, this amounts to 13.45-23.40 billion FCFA.**

OFNACER claims that its market studies show that OFNACER must "manipulate" 60,000 tons of grain per year in order to have an impact on national cereals prices.*** In the past three years, OFNACER has never obtained that amount. Sales for 1978-79 were 21,248 tons and for 1979-1980 were 28,346.**** If the above

*See Niger Ag. Sector Assessment, Volume II, Part F, USAID, 1979.

**\$50,727,273 to \$85,090,909 at rates of 275 FCFA = \$1 U.S.

***Letter from Minister of Rural Development to U.S. Ambassador, February 11, 1981.

****OFNACER Reports.

estimates of the amount of local grain marketed are reasonable, then OFNACER's sales represent from 13.7 percent to 3.2 percent of the total of local grain marketed in 1978-79 and 18.6 percent to 11.1 percent in 1979-80.

OFNACER's grain sales, however, are made up almost 80 percent by food aid. In the three-year period of 1977-78 to 1979-80, OFNACER received 68,983,978 kilograms of foreign aid grain. Table 29 gives the breakdown of those grain receipts and their disposition as of September 30, 1980. The net amount of this food aid, 65,748,603 kilograms, represents an average of 21,249,534 kilograms per year, the equivalent of the entire OFNACER sales for 1978/79 and 73.5 percent of sales for 1979/80.

As of June 1981, 26,889 tons of food aid had been committed for the 1980/81 year, most of which was expected to arrive in Upper Volta by September 30, 1981. This was considerably below the 54,000 tons recommended by the CILSS multi-donor mission or the 93,666 tons requested by the government.

Because there are not data available to calculate elasticities of demand for cereals, it is difficult to determine how OFNACER affects the market price. However, given the small percentage of grain OFNACER handles relative to the commercial market or national consumption, it is doubtful if that influence is strong. It appears that their influence is short term and limited to periods when foreign food aid shipments arrive.

TABLE 29

FOOD AID RECEIVED BY OFNACER
1977/78, 1978/79, 1979/1980

<u>Source</u>	<u>Quantity</u> <u>(Kg.)</u>	<u>Sold</u> <u>(Kg.)</u>	<u>Free</u> <u>Dist.</u> <u>(Kg.)</u>	<u>Loss &</u> <u>Spoilage</u> <u>(Kg.)</u>	<u>Stock</u> <u>9-30-80</u> <u>(Kg.)</u>
U.S. Aid	20,700,734	20,412,530		5,223	284,981
France	11,860,220	8,536,173			5,324,042
World Food Pgm.	14,249,697	2,000,000	12,249,697		
Nether- lands	5,901,421	5,280,598	1,200	207,971	411,652
Germany	2,696,400	2,696,400			
Saudia Arabia	2,065,321 ^{1/}		2,065,321 ^{1/}		
Belgium	2,738,974	2,738,974			
European Common Market	<u>9,551,211^{2/}</u>	<u>7,812,733^{2/}</u>	<u>534,922</u>	<u>166,736</u>	<u>836,770</u>
Total	<u>69,565,978^{3/}</u>	<u>49,477,463</u>	<u>14,851,140</u>	<u>377,930</u>	<u>4,857,445</u>

^{1/} Includes 330,000 kilograms of peanut oil and salt.

^{2/} Includes 200,000 kilograms of butter-oil.

^{3/} Grain total: 63,983,978.

Source: OFNACER.

XI. IMPACT ON THE CEREALS MARKET
FROM OFNACER'S PRICING POLICY

OFNACER establishes consumer prices for cereals on a per sack basis for each commodity. Table 30 gives the most recent price breakdown for the various products handled. For the most part, these can be regrouped into premium local grains (white sorghum, millet and corn), local and imported red sorghum, and rice. Prices established are then uniform selling prices throughout the country.

Obviously the handling costs of these different grains will vary tremendously according to origin and distribution. American red sorghum, for example, incurs costs to OFNACER only from the railroad station in Ouagadougou (transport to that point is paid by AID). Local red sorghum, which could be purchased in the southern part of Koudougou Department at Leo will incur transport costs from that point to its sales point. For example, if local red sorghum was bought in Leo and sold in Dori, total transport distance would be:

Leo - Ouaga	165 Kms.
Ouaga - Kaya	98 Kms.
Kaya - Dori	<u>163</u> Kms.
Total	426 Kms.

At OFNACER's estimated transport cost of 55 FCFA/ton kilometer, transport costs would equal 14.91 FCFA/kilogram, whereas American red sorghum costs only 9.13 FCFA/kilogram to transport from Ouagadougou to Dori.

The 5.78 FCFA/kilogram additional cost for transport of local sorghum must be absorbed by OFNACER. Again, assuming local grain

TABLE 30

OFNACER CONSUMER PRICES AS OF NOV. 1980

<u>Commodity</u>	<u>Unit Size/Kgs.</u>	<u>Price/Unit</u>	<u>Price/Kgs.</u>
			(FCFA)
White sorghum	100	7,150	70
White sorghum	50	3,625	70
Local millet	100	7,150	70
Local millet	50	3,625	70
Red sorghum	100	6,350	62
Red sorghum ^{1/}	50	3,225	62
Red sorghum ^{1/}	45.36	2,945 ^{2/}	65 ^{2/}
Local mais	100	7,150	70
Local mais	50	3,625	70
Mais flour	50	3,800	75
Whole flour	100	12,800	125
Whole rice	92	11,700	125
Whole rice ^{3/}	50	6,450	125
Kou rice ^{3/}	50	5,700	110
Whole rice	25	3,275	125
Whole rice	22	2,965	125
Broken rice	100	9,300	96
Broken rice	50	4,950	96
Broken rice	25	2,525	96
Wheat flour	50	6,200	125

^{1/} U.S. red sorghum 100 lb. bags.

^{2/} Reduced to 2,745 on July 15, 1981, 60.5/Kg.

^{3/} Local from Kou Vailey 64.52% broken.

Source: Ofnacer, Note de Service 0958, Nov. 7, 1980, Application de l'Arrete No. 040/MCODIM/MO., 6 Nov., 1980.

is bought in Leo, OFNACER's transport costs to Dori will be 9.14 FCFA/kilogram higher than delivering the same grain to Ouagadougou. This puts OFNACER in an unfavorable position vis-a-vis local grain merchants. A single national price both at farm levels and consumer markets will increasingly work to OFNACER disadvantage because of the following general reasons.

1. Private merchants will outbid OFNACER in the most favorable producing areas relative to consumer markets, that is, areas nearest consuming centers and nearest good road access where transport costs are lowest.
2. Private merchants will sell in the most favorable markets, that is, large urban markets with best access to good transport.
3. OFNACER will increasingly be obligated to sell grain in the least favorable areas in terms of costs such as the Sahel, Yatenga and Kaya. This will happen because private merchants will favor the easier access southern markets, shortages will occur and OFNACER will have to supply these markets unless price differentials are adequate to entice merchants to move grain north.
4. To cover operating and transport costs in the more remote northern areas, OFNACER will be obligated to maintain high volume sales in the southern areas and the large urban centers, so profits made in these areas can cover losses in the north.

5. Without high volumes of free donated grain from foreign donors, OFNACER will not be able to move large volumes through the southern and urban markets. This is because private merchants can outbid OFNACER on producer prices and, therefore, would always capture the profitable consumer markets. This is due to the cost factors that will be established by averaging. Thus, cost margins would always be skewed upward as OFNACER increasingly moves to less favorable markets.
6. Thus, with low volumes in the southern regions, unit costs rise putting further pressure on OFNACER operating margins.
7. A similar situation will occur on the producer markets, with OFNACER being relegated to the most isolated and distant producer markets because merchants will outbid them in more accessible markets. Therefore, OFNACER's buying costs will be higher than those of the merchants.
8. The overall result will be a market distortion that will allow merchants to profit in the most lucrative markets and OFNACER, if it is to cover its true costs, will have to set prices that will permit free operations of the merchants. If true costs are not covered by the market margin of OFNACER, they can only be met by transfers from donated grain sales or state subsidies.

9. A more realistic price structure must therefore be established based on actual handling costs which will require a multiple price market. An effective geographic differentiation is needed.

OFNACER's goal of stabilizing prices intra-annually, i.e., from harvest to harvest, can be accomplished if, and only if, OFNACER captures a large enough volume of the total market so that it can store grain and release that grain over the course of the year. Market quantities drop and prices rise primarily in the period of June through September each year, just prior to the next harvest. OFNACER, at present, maintains an established price throughout the year, consumer price increases being made after a new harvest is under way. The general assumption in Upper Volta is that grain is hoarded until this period each year and then released on the market when extremely high prices permit excessive profits to be made by speculators. However, the costs of off-farm grain storage* suggest that this may not necessarily be in the interests of grain merchants. If OFNACER attempts to buy and store grain for release in the short supply months, it will incur high storage costs. If OFNACER attempts to cover those storage costs through consumer prices, those prices will be far above consumer prices in the immediate post-harvest months. Prices will gradually rise until OFNACER prices are reached. The degree to which market stabilization can be achieved will be extremely limited. In fact, without imported cereals, OFNACER probably could have no impact whatsoever.

*See Section on Storage Costs.

If OFNACER does not set consumer prices adequate to cover storage costs, then it will:

1. Subsidize the consumer, and eventually bankrupt OFNACER;
2. Drive all merchants out of grain storage, forcing them on to a strictly cash market, and cause instability in the market; and
3. Divert benefits from rural farmers to urban consumers, causing production disincentives.

The degree to which prices are stable or unstable on the intra-annual market are more closely linked to farmers' cash position than to grain merchant speculation. In general:

1. For purposes of price stabilization, national stock levels are important, but it does not matter where those stocks are held, on-farm, merchants, cereals banks, or OFNACER.
2. Observations would indicate that merchants are not storing grain for long periods. Quality of grain in Upper Volta's markets indicates that it either recently left farm storage or merchants have much better stock quality control than OFNACER.
5. The main element of price stability will be the elasticity of supply of the producers. This will be governed by:

- . quantity of in-farm stocks;
 - . demand for cash income by farmers; and
 - . sources of cash income to stock holders.
4. Producer's supply curves will tend to be more elastic in years of high production, i.e., they will respond to small changes in price, and less elastic in periods of low production, i.e., large price increases will be needed to bring forth greater quantities. The supply curve is probably not linear, i.e., it is exponential.
5. The aggregate supply curve will shift to the right as on-farm stocks increase, thus, putting a greater share of the market supply in the more elastic portion of the curve, and hence a more stable national price.
6. The demand for cash income would be expected to be relatively stable, with a gradual increase over time.
7. The supply of cash income for producers outside of grain sales will be from:
- . cash crops;
 - . livestock sales; and
 - . off-farm and migrant labor.
8. Livestock income will be relatively stable as it will be limited to the natural reproduction rates.

9. The output of cash crops will depend on the production season. Good years will lower the demand for cash from other sources such as cereals and farmers will tend to build stocks. However, good years will also produce increased quantities of cereals, thus causing a shift to the right of the supply curve, and hence, lower cereals prices.
10. In the longer run, the ratio of labor returns in cash crops to labor returns in cereals will contribute to the total cereals supply as farmers shift out of or into cereals production.
11. Off-farm and labor migration could lower market supplies as less labor is available for production and as family cash income increases with wage earnings.

Exactly how these forces operate in Upper Volta is not very well known. However, given the supply constraints for cereals, it is doubtful if CFNACER can have any impact on price stability without large volumes of donated grain. In the long run that can only have a negative effect on local production.

XII. STORAGE COSTS AND THEIR IMPACT UPON INTRA-ANNUAL PRICE MOVEMENTS

The price variations from one harvest to the next harvest should show increases equal to the cost of holding that grain off the market. Those costs are capital costs for storage facilities, operating costs for grain handling, costs for loss in storage, cost of tying up funds in inventories, and costs of taking risks. In Table 31, these costs are estimated in comparing different types of storage structures. The costs for warehouse storage were apparently estimated for government storage of the type used by OFNACER in Upper Volta. The estimate of 10,200 FCFA to 14,200 FCFA per ton per year of storage are low relative to comparable parallel market values. First, construction costs are extremely low, secondly, interest on investment is set at only 6 percent, and finally, no allowance has been made for interest costs of holding inventories. Table 32 adjusts those estimates for a privately-owned storage facility. The calculated annual average cost for a 20-year investment in storage facilities is 22,000 FCFA/ton.

For a private grain merchant, grain would be bought in the lowest price period to be placed in storage and sold at what ever point sales price equals or exceeds his purchase cost plus his storage costs. As the season approaches the next harvest, in September, new grain will begin to come on the market causing a softening of prices. Therefore, the merchant would want to move inventories by the end of September. Effectively, then, a storage facility has a 10-month functional use each year. Table 33

TABLE 31
COMPARISONS OF METHODS OF STORAGE
(Per Ton in FCFA)

Type	Construction Cost 1/	Period Depreciation Years	Depreciation Per Year 2/	Replacement Costs 3/	Losses		Total Cost Per Year
					%	Value	
Traditional granary	500	2-3	250	-0-	4-5	1,800 ^{4/}	2,100
Warehouse (Bags)	35,000	20	2,800	500-900	4	2,400 ^{5/}	10,200 1,420
Modern silo (Bulk)	80,000	30	4,400	3,000-5,000	1	600 ^{5/}	7,800- 9,800

1/ Includes equipment, per ton.

2/ Six percent interest on capital.

3/ Farmers labor not included.

4/ Producer price at 45 CFA/Kg.

5/ Purchase price delivered to warehouse, FAO calculation at 60/FCFA/Kg.

Source: Thonevin.

was constructed to demonstrate this effect on two rural market price series. One series, taken by Gerard Ancey* in 1971-72 in Mossi country, gave only monthly prices per tine taken in 5 regions and does not give the total number of observations. The other series was taken in 6 markets in the Manga region by Sherman** on weekly observations over a 50-week period from September 1979 to September 1980. It would be better to make comparisons with a large urban consumer market such as Ouagadougou, however, no data were available. Ancey did note that generally the rural market prices were only slightly lower than in Ouagadougou (28%). Calculating residual values after storage costs for the 1971-72 data using present storage costs is somewhat inaccurate. Construction costs were lower than those given in Table 32, thus depreciation and interest costs would be lower. Also grain costs were less so interest on stock holdings would be lower. However, the general trends should be similar to the 1979-80 market.

As can be seen from Table 32, a large amount of the intra-annual price increases appears to be explained by storage costs. In Manga, for example, price fluctuations on the raw market prices vary 57 percent during the year and only 21 percent on the adjusted price. In the 1971-72 series, the variations were 158 percent and 55 percent, respectively. In fact, linear regression shows a correlation coefficient of .934 on the 1979-80 data and .934 on the 1971-72 data.

*Gerard Ancey, "Milieux Ruraux Mossi, Aspects Economiques" Annexe III, CRSTOM, 1975.

**Jacqueline R. Sherman, "Crop Disposal and Grain Marketing in the Manga Region of Upper Volta - A Case Study," CRED, Feb. 1981, preliminary.

TABLE 32

ESTIMATED COST OF STORAGE IN UPPER VOLTA
CONCRETE WAREHOUSE, CEREALS IN BAGS
(Per Ton Per Year FCFA)

<u>Year</u>	<u>Const. Cost</u>	<u>Deprec. (20 Yr.)</u>	<u>Interest on Capital</u>	<u>Recurrent Costs</u>	<u>Losses (5%)</u>	<u>Interest on Stock</u>	<u>Total Cost Per Ton/Yr.</u>
1	60,000 ^{1/}	3,000 ^{2/}	6,000 ^{3/}	6,850 ^{4/}	3,000 ^{5/}	6,000 ^{6/}	24,850
2		3,000	5,700	6,850	3,000	6,000	24,550
3		3,000	5,400	6,850	3,000	6,000	24,250
4		3,000	5,100	6,850	3,000	6,000	23,950
5		3,000	4,800	6,850	3,000	6,000	23,650
6		3,000	4,500	6,850	3,000	6,000	23,350
7		3,000	4,200	6,850	3,000	6,000	23,050
8		3,000	3,900	6,850	3,000	6,000	22,750
9		3,000	3,600	6,850	3,000	6,000	22,450
10		3,000	3,300	6,850	3,000	6,000	22,150
11		3,000	3,000	6,850	3,000	6,000	21,850
12		3,000	2,700	6,850	3,000	6,000	21,550
13		3,000	2,400	6,850	3,000	6,000	21,250
14		3,000	2,100	6,850	3,000	6,000	20,950
15		3,000	1,800	6,850	3,000	6,000	20,650
16		3,000	1,500	6,850	3,000	6,000	20,350
17		3,000	1,200	6,850	3,000	6,000	20,050
18		3,000	900	6,850	3,000	6,000	19,750
19		3,000	600	6,850	3,000	6,000	19,450
20		3,000	300	6,850	3,000	6,000	19,150
		<u>50,000</u>	<u>50,800</u>	<u>137,000</u>	<u>50,000</u>	<u>120,000</u>	<u>440,000</u>

^{1/} Based on 100,000 FCFA/m² with storage capacity of 1.67 tons per m².

^{2/} Straight line.

^{3/} 10% interest on investment, declining balance.

^{4/} Repairs, maintenance - 5% of construction cost; fumigation - 1,000 FCFA; salaries based on 20,000 CFA/month plus 65% for benefits; transport based on 35 CFA/T. km. in 100 mile radius; handling based on 25 CFA/100 kg. sack times 2, taxes estimated. Total - 6,850 ton/year.

Based on Sherman and FAO.

^{6/} 10% interest on 60,000 FCFA/ton in storage.

TABLE 33

EFFECTS OF STORAGE COSTS ON RURAL GRAIN PRICES
IN UPPER VOLTA 1971-72 and 1979-80
 (FCFA/Metric Ton)

	<u>Estimated^{1/}</u> <u>Monthly</u> <u>Storage</u> <u>Costs</u>	<u>Mil/Sorghum^{2/}</u> <u>Prices on</u> <u>Manga Market</u> <u>1979/80</u>	<u>Residual</u> <u>Value</u> <u>Less</u> <u>Storage</u>	<u>Mil/sorghum^{3/}</u> <u>Prices, 1971-</u> <u>72</u> <u>(ORSTOM)</u>	<u>Residual</u> <u>Value</u> <u>Less</u> <u>Storage</u>
Dec.	2,200	47,408	45,208	29,429	27,229
Jan.	4,400	50,772	46,372	21,429	17,029
Feb.	6,600	53,739	47,139	25,143	18,543
Mar.	8,800	58,787	49,987	27,429	18,629
Apr.	11,000	64,226	53,226	33,143	22,143
May	13,200	55,273	53,073	36,571	23,371
June	15,400	69,644	54,244	42,000	26,600
July	17,600	71,519	53,919	51,429	33,829
Aug.	19,800	74,544	54,744	55,714	35,914
Sept.	22,000	74,446	52,446	53,143	31,143
Oct.		61,480		38,571	
Nov.		47,917		27,143	

^{1/} Annual cost from Table 32, on 10-month basis.

^{2/} Monthly average of weekly observations on Manga markets, from Sherman.

^{3/} Gerard Ancey, "Milieux Ruraux Mossi, Aspects Economique, Part II, Annexe III, ORSTOM, 1975.

It is not argued here that either merchants or farmers own storage facilities that would cause them to incur costs of storage as seen in Table 52. In fact, in the rural markets such as Manga, grain storage is almost exclusively on-farm which is very low cost. The situation that does exist is that the merchant buys grain throughout the year to supply his urban market needs, rather than buying and storing grain. If the merchant did so, those storage costs would be incurred. They are also the true costs that the government would incur if it invests in grain storage. In effect then, the farmer who holds grain until late in the season, receives the benefit of the implied high cost of off-farm storage. If the government builds storage and buys grain at the low price, it will shift benefits away from the rural farmer. These benefits will either go to the consumer in subsidized storage costs (consumer prices below those adequate to cover storage costs) to the government, or both.

Obviously an imputed cost for storage does not explain all of the intra-annual price variation. Several buyers appear in the grain market for a variety of reasons. Not all buyers are merchants operating to move grain to consumer markets. For example, there are farmer speculators who buy grain to take advantage of high prices later in the year. Their advantage is that they can profit from quite low on-farm storage costs. Sherman suggests there are few in the Manga region buying on the market. However, the degree to which such buyers exist outside the formal market setting is unknown. In Niger*, it was found to be widespread that villagers

*Niger Ag. Sector Assessment, Vol. II, Part D, USAID, 1979.

bought and sold grain between themselves, and speculation was not uncommon.

In addition to farmer buyers, there are purchases made by livestockmen.* As soon as these people know the size of their own grain harvest, they will sell livestock to buy grain. The livestock grain ratio will have much to do with the extent of their market activities in both grain and livestock markets. Although generally these people prefer to buy grain in December, they may buy any time.**

Finally, as noted elsewhere, farmers will sell grain when they need cash and no other source except grain is available. They will also move grain when they have adequate stocks or feel they will have adequate stocks. If, for example, the crop looks good or early harvest indicates it will be good, farmers will sell grain in September and October before harvest is completed. This may explain the softening of prices from September through November before the December market low is hit. Because this period is a time for farmers to liquidate old on-farm stocks and also a period when new harvest may be marketed, it shows a general price softening in Table 33, and was not included in the storage cost analysis.

*Who are generally also farmers, but here we refer to those whose primary interest is livestock.

**Dr. Richard Vengroff, "Upper Volta Village Livestock Project," AID CID 686-11-150-203, Texas Tech University. See also Shapiro, Kenneth, et al, Livestock Production and Marketing in the Entente States of West Africa: Summary Report, CRED, University of Michigan, 1979.

APPENDIX A

OFNACER COST STRUCTURE 1979-1980

1. Fixed Costs
2. Variable Costs.

STRUCTURE OF FIXED COSTS,
(GENERAL EXPENSES) 10-1-79 TO 9-30-80

Salaries	184,692,738	
M.O.	10,222,742	
Lodging	1,825,000	
Travel	16,176,819	
Bonuses	455,000	
Various indemnities	25,463,779	
Social security	35,144,841	
Medical	3,485,685	
Other social costs	<u>2,229,771</u>	
Total Personnel		279,696,371
Taxes, <u>Fonciers</u>	282,430	
City taxes	834,300	
Taxes - <u>Prestations de service</u>	10,070	
Local taxes	200,000	
Registration taxes	1,000	
Fiscal stamps	<u>215,030</u>	
Total Taxes		1,542,830
Rents	15,823,590	
Fuel	63,839,000	
Maintenance, repair vehicles	55,954,348	
Maintenance, repair office	2,198,592	
Maintenance, repair buildings	2,687,994	
Maintenance supplies	3,198,529	
Maintenance, repair mobylettes	125,504	
Hand tools	1,191,309	
Studies, research, documents	30,000	
Electricity	4,594,045	
Water	819,944	
Honorariums	3,997,460	
Insurance	<u>7,126,060</u>	
Total I.F.S.E.		161,581,385
Transportation of personnel	2,081,135	
Travel and moving	<u>393,560</u>	
Total		2,474,695
Publicity	2,082,157	
Trips - receptions	2,058,940	
Office supplies	18,941,441	
Documentation	90,550	
Post Office, telephone, telegraph	9,834,734	
Legal	19,275	
Gifts, awards	174,200	
Directors honorarium for meetings	<u>1,500,000</u>	
Total Misc. Expenses		34,701,297
Interest on loans	4,062,449	
Interest on commercial charges	2,709,942	
Bank charges	<u>1,292,519</u>	
Total Finance Costs		<u>3,064,910</u>
General Total, Fixed Costs		488,061,492
Quantity Sold		<u>26,846,419 Kg.</u>
Cost per Kilo, Fixed Costs		18.18 FCFA/Kg.
Depreciation		196,312,460

STRUCTURE OF VARIABLE COSTS
10-1-79 TO 9-30-80

Handling	6,695,628
Sales commissions	421,210
Transport	<u>51,917,452</u>
Total	<u>59,034,290^{1/}</u>
General expenses (fixed)	488,061,492
Depreciation	196,312,450
Variable costs	<u>59,034,290</u>
Total	<u><u>743,408,242</u></u>
Grain sold (kgs.)	26,846,419
Cost per Kg. - FCFA	27.69

^{1/} Apparently does not include all variable costs. At least three account categories (616,617, 620) are missing.

Source: OFNACER, unaudited financial report, 1979/80.

APPENDIX B

MAPS

APPENDIX B

- Map 1: OFNACER Suggested Warehouse Locations
- Map 2: Existing OFNACER storage Capacity
- Map 3: Department Center--Ouagadougou
- Map 4: Department Centre Ouest-Koudougou
- Map 5: Department Centre Nord-Kaya
- Map 6: Department Centre Est-Tenkodogo
- Map 7: Department Nord-Ouahigouya
- Map 8: Department Sud Ouest-Gaoua
- Map 9a,9b: Department East-Fada-N'Gourma
- Map 10a,10b: Department Hauts Bassin-Bobo Dioulasso
- Map 11a,11b: Department Volta Noire-Dedougou
- Map 12: Department Comoé-Banfora

DEPARTMENT MAPS KEY

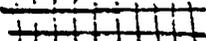
Paved roads 

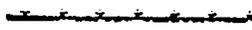
Gravel roads 

Roads being paved 

Tracks 

New gravel roads 

Railroads 

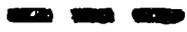
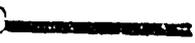
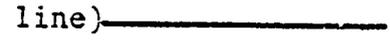
Railroads to be built 

Security stock warehouses: 500 T.  1,000 T. 

Suggested retail warehouses (150-250 T.) 

Other warehouses 

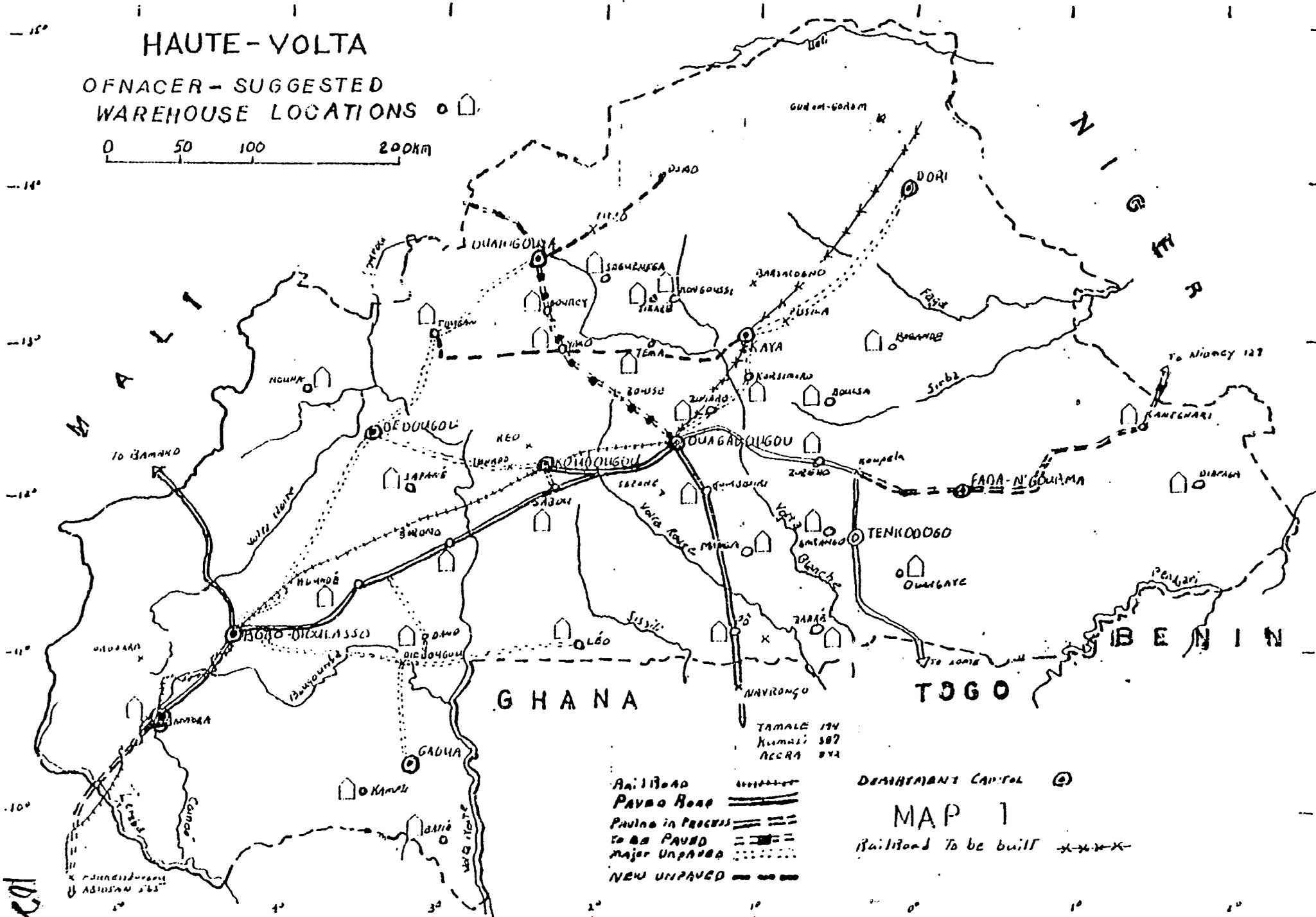
Metal warehouses  400 T.

National Capitol 
 Department Capitol 
 Sous Prefecture 
 Warehouse site  Batie
 National boundary (heavy bar) 
 Department boundary (heavy line) 
 Sous Prefecture boundary (light line) 

HAUTE-VOLTA

OFNACER - SUGGESTED
WAREHOUSE LOCATIONS

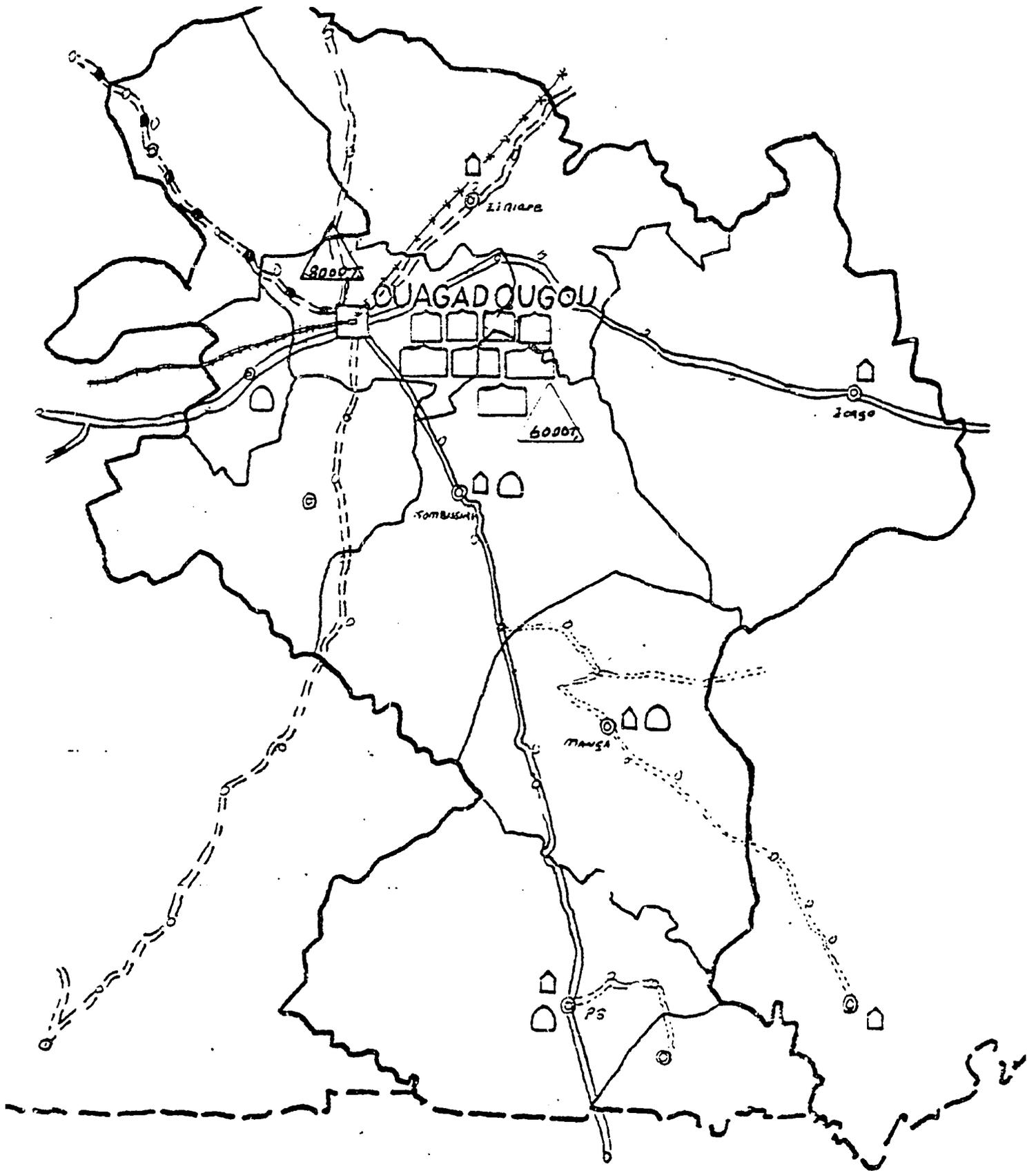
0 50 100 200 KM



Railroad
 Paved Road
 Roads in Process to be Paved
 Major Unpaved
 NEW UNPAVED

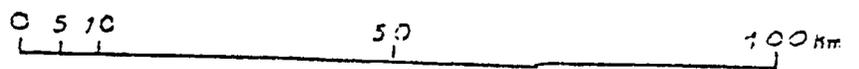
DEPARTMENT CAPITAL
MAP 1
 Railroad to be built

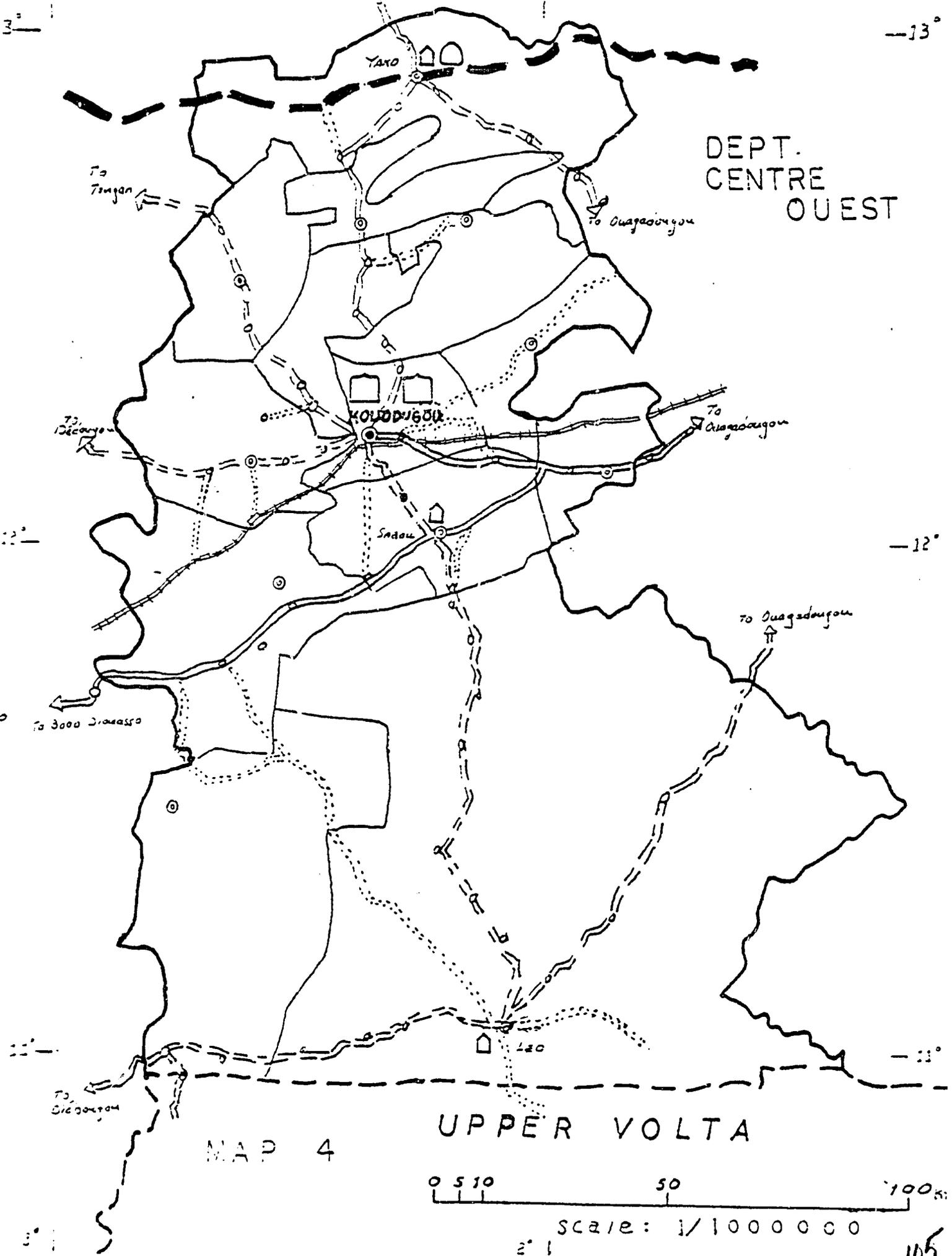
TAMALE 194
 KUMASI 387
 ACCRA 872

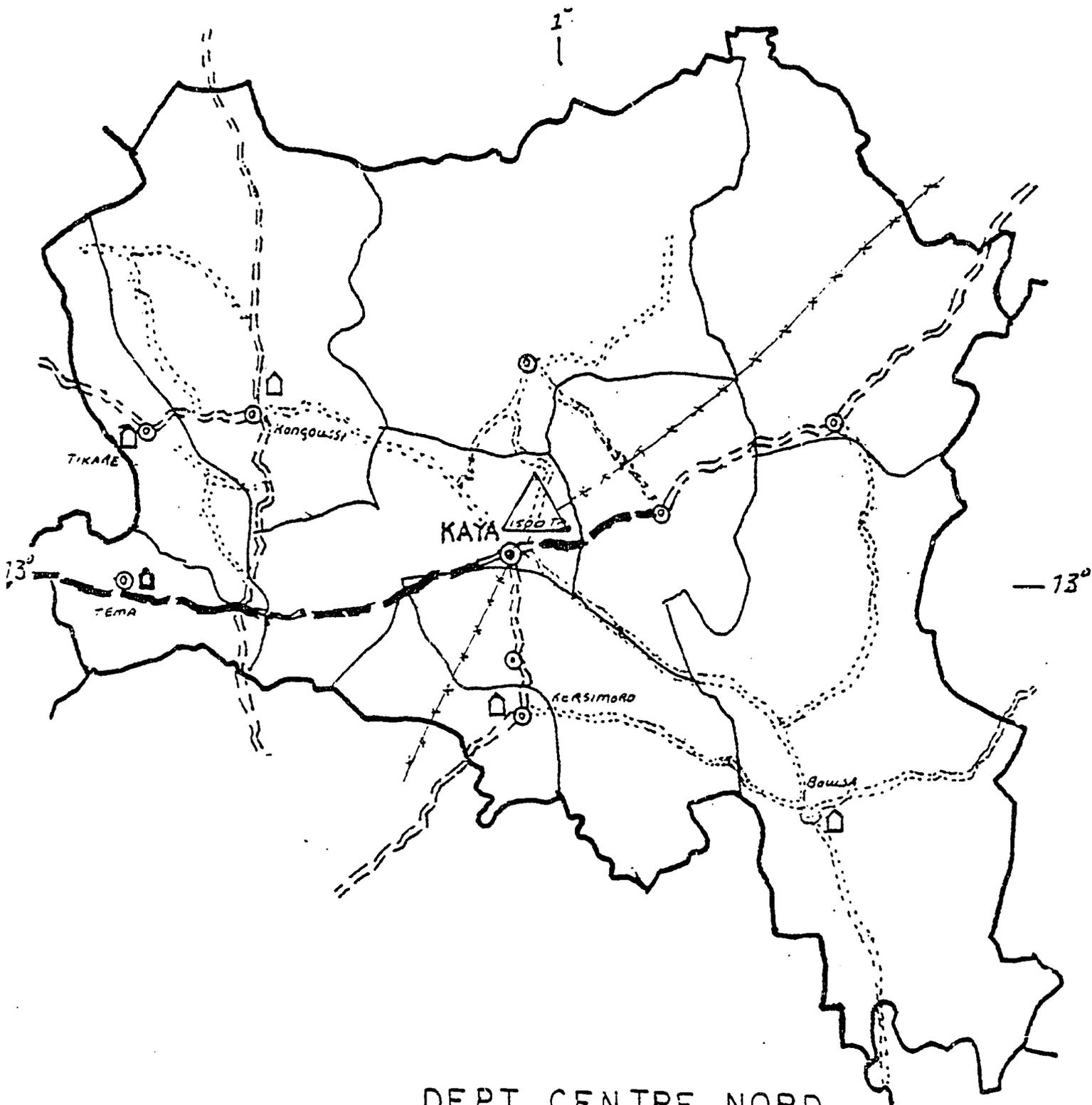


MAP 3

DEPARTMENT-CENTER
UPPER VOLTA



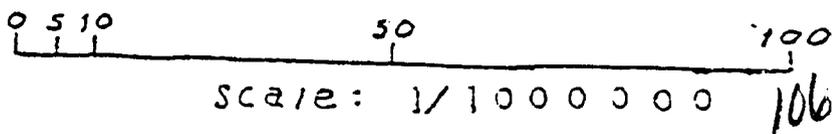


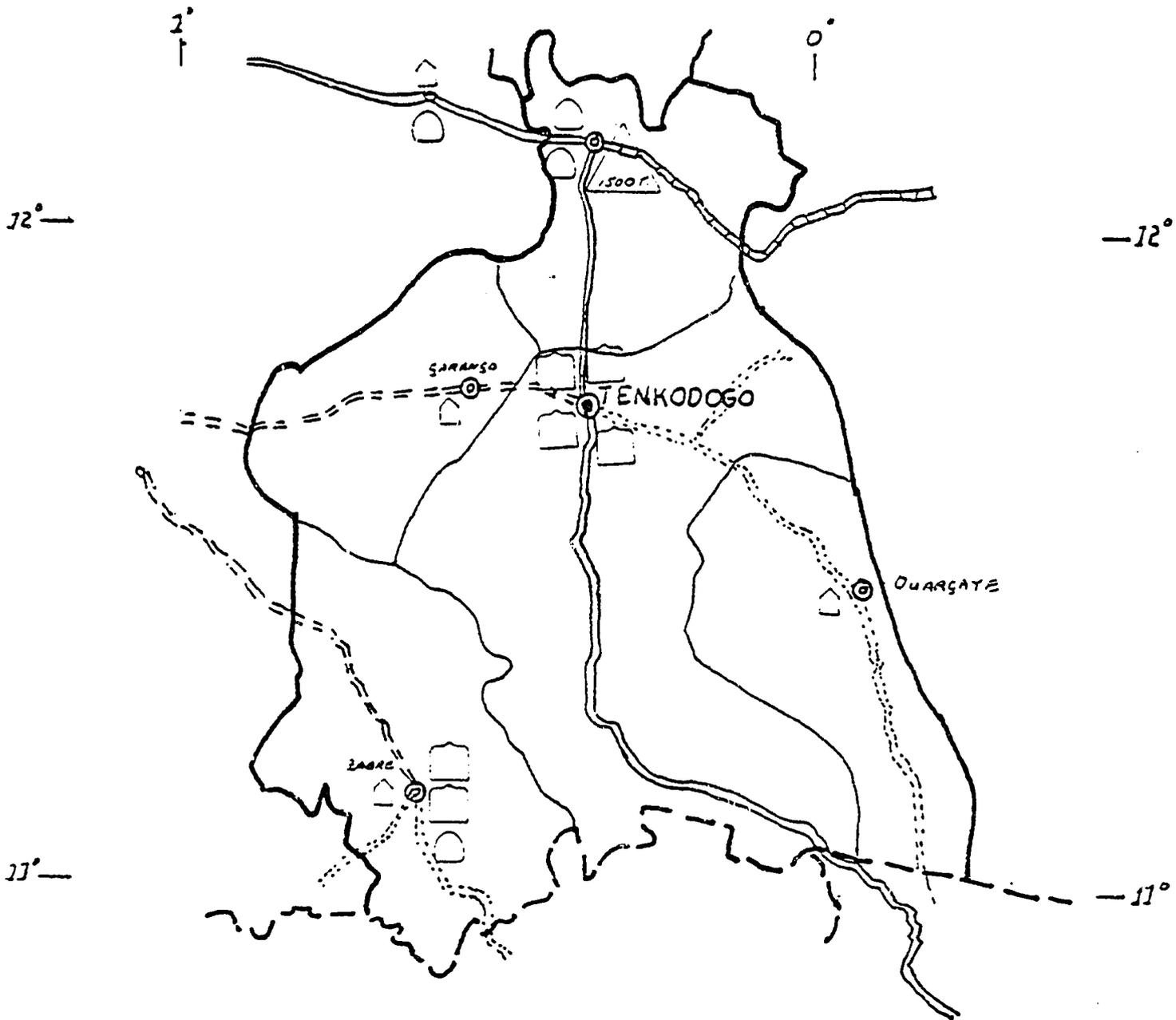


DEPT. CENTRE NORD

MAP 5

UPPER VOLTA

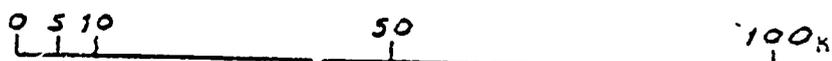




DEPT. CENTRE EST

MAP 6

UPPER VOLTA



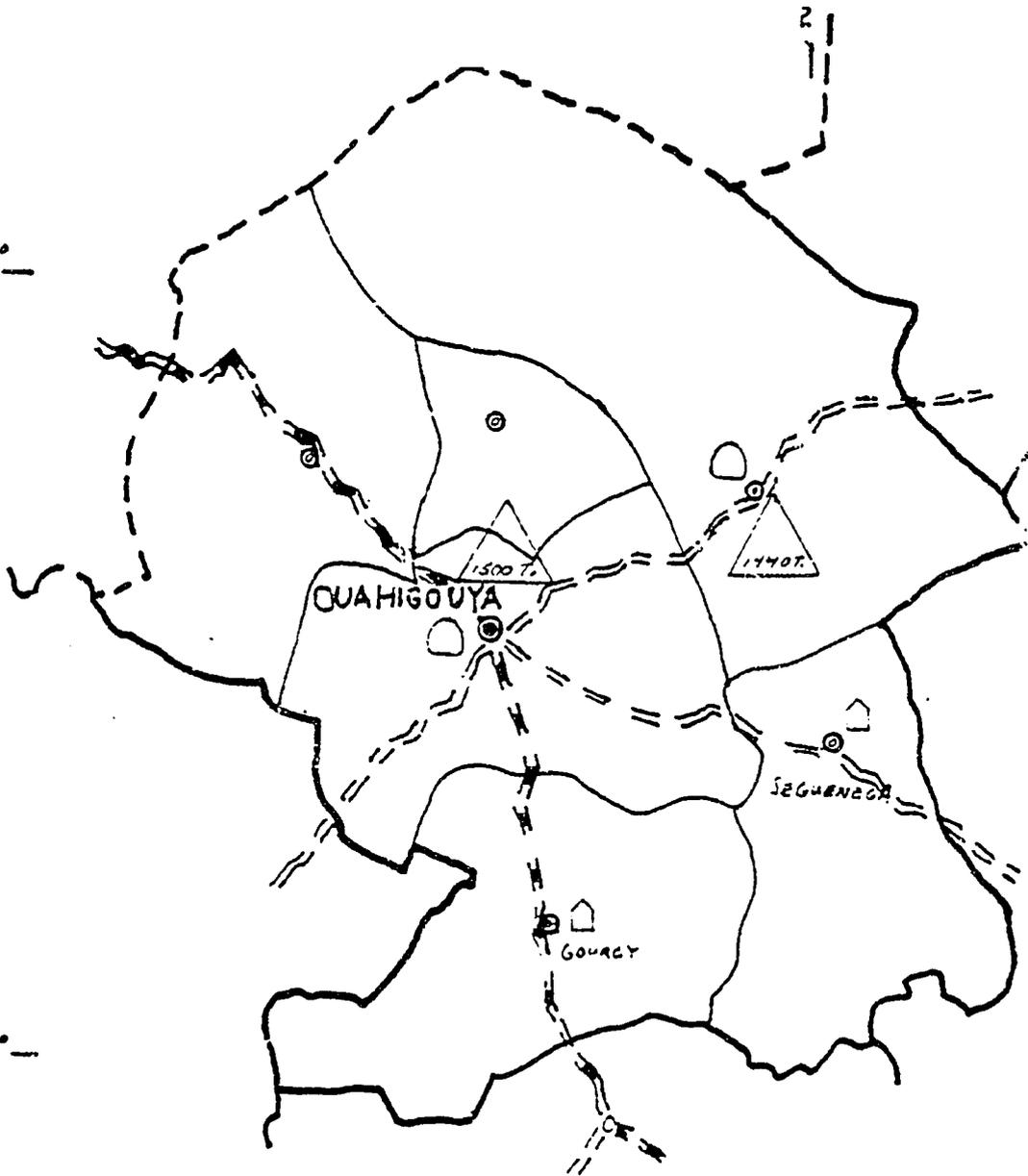
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14°

—14°

13°

—13°

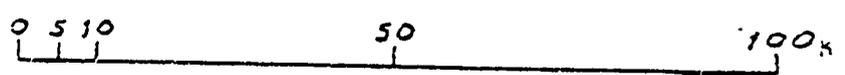


DEPT. NORD

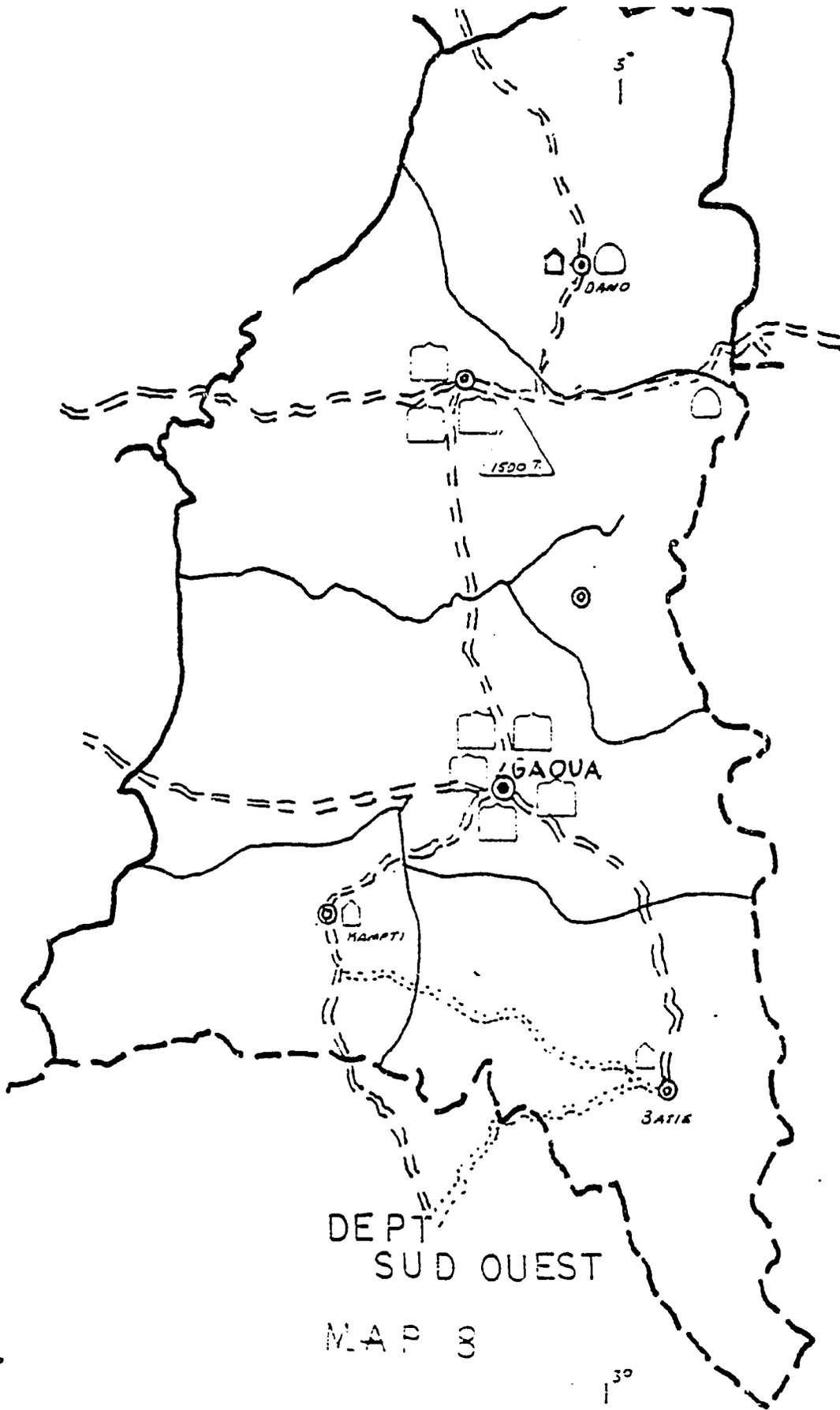
MAP 7

1
2°

UPPER VOLTA



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11°

11°

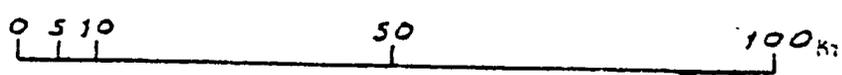
10°

10°

DEPT
SUD OUEST

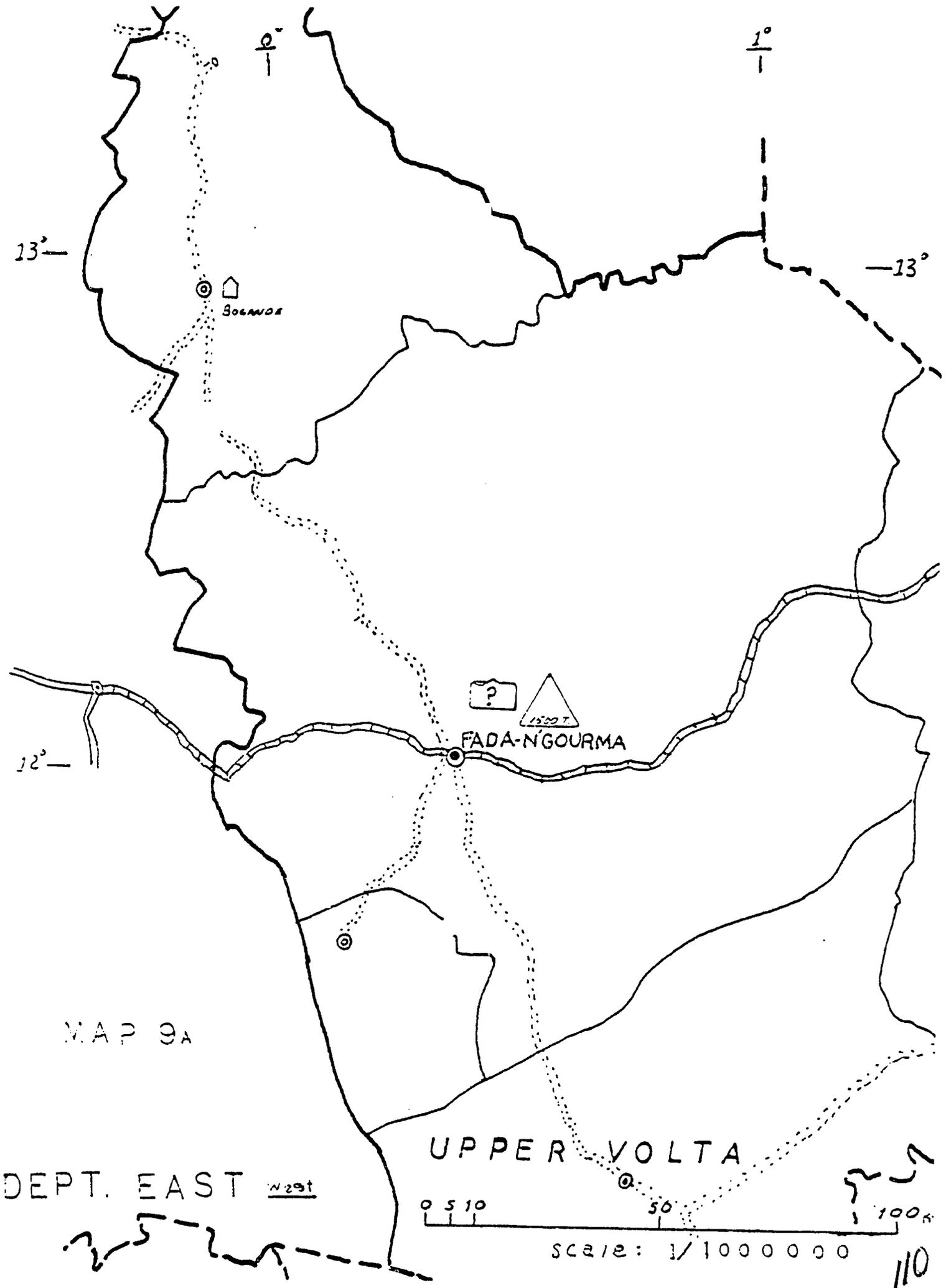
MAP 8

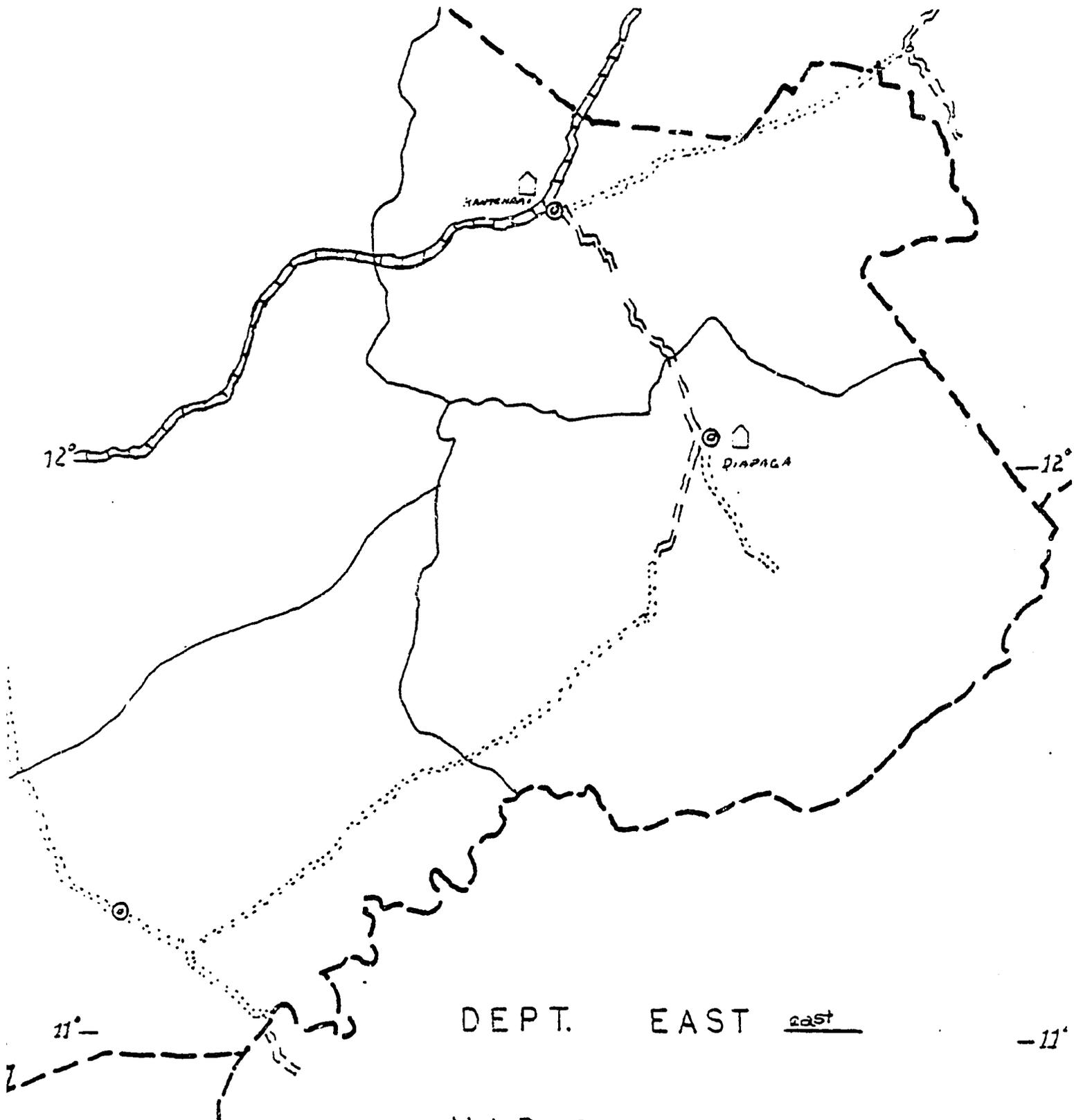
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109

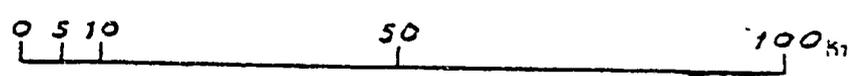




DEPT. EAST east

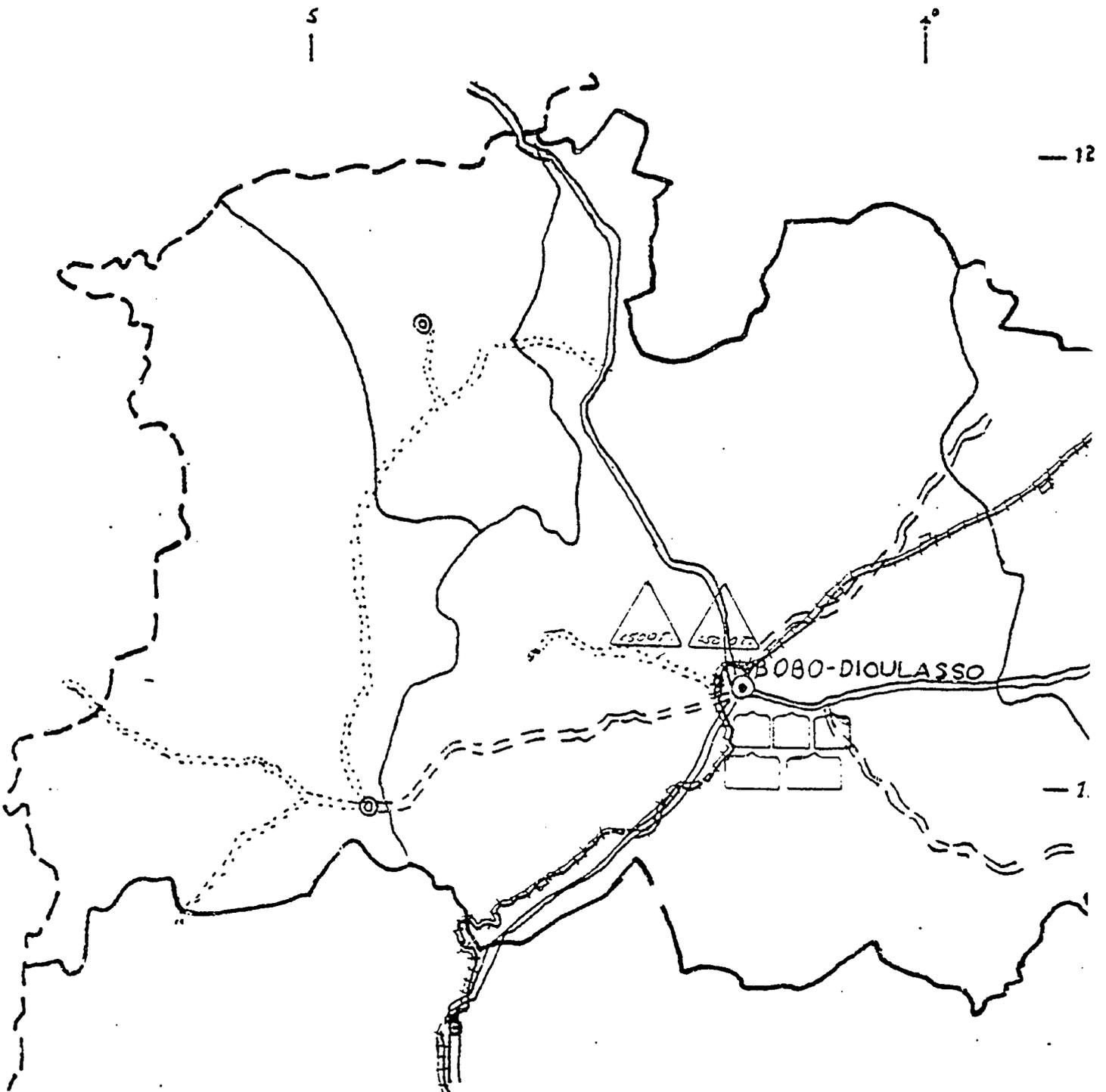
MAP 9B

UPPER VOLTA



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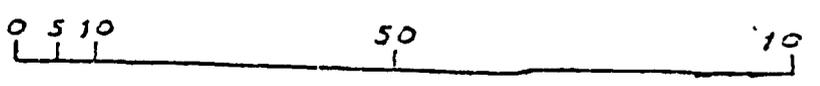




DEPT. HAUTS BASSIN West

MAP 10A

UPPER VOLTA

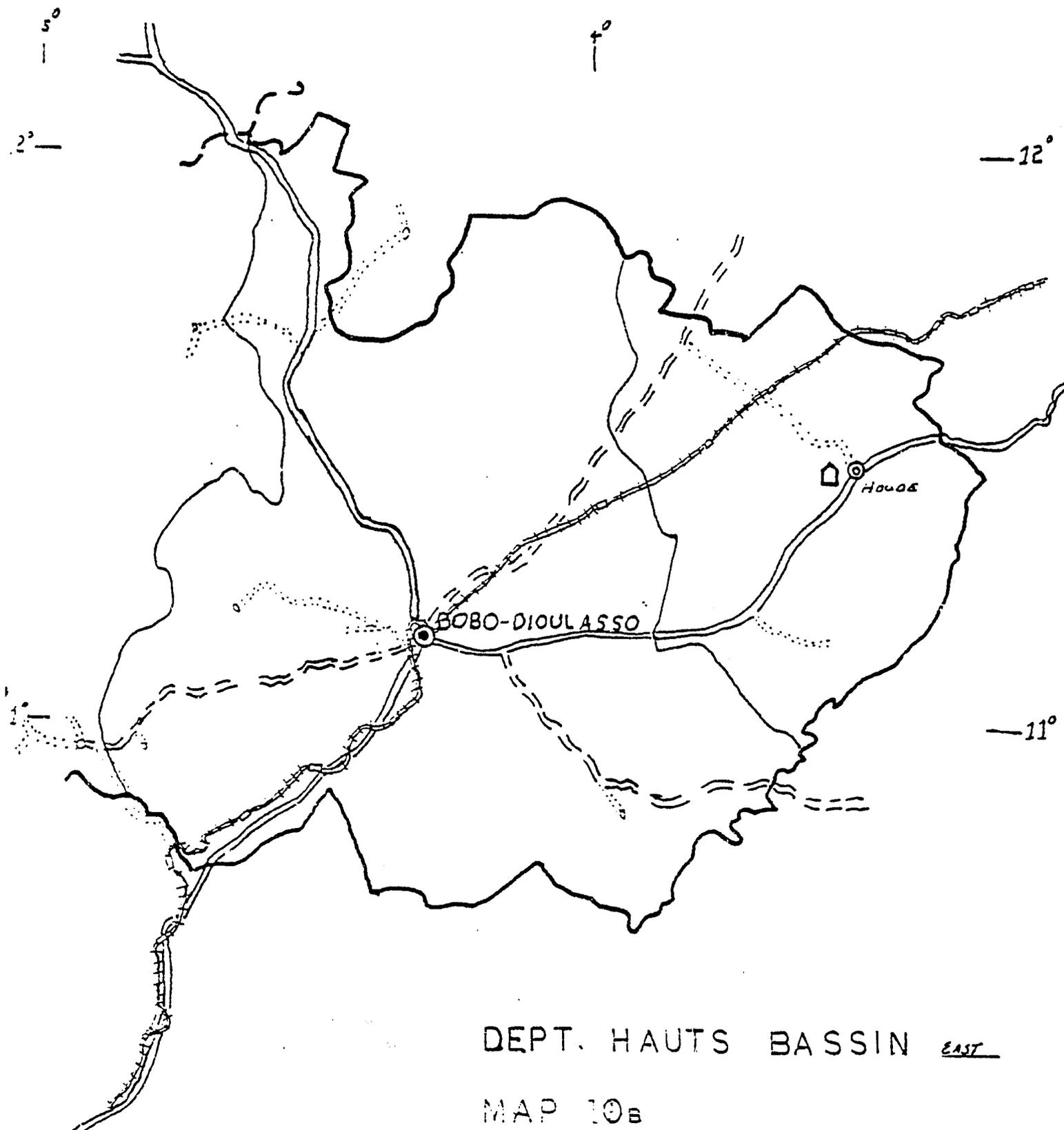


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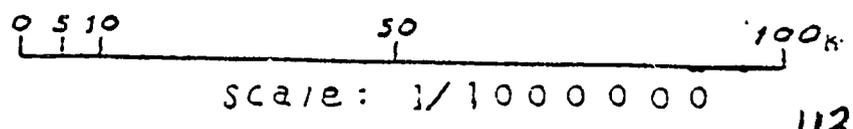
112



DEPT. HAUTS BASSIN EAST

MAP 10B

UPPER VOLTA



13°

-13°

12°

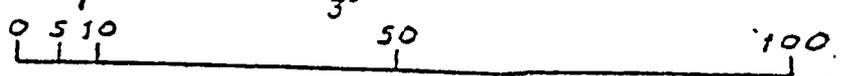
-12°

DEPT. VOLTA NOIRE EAST

MAP 11A

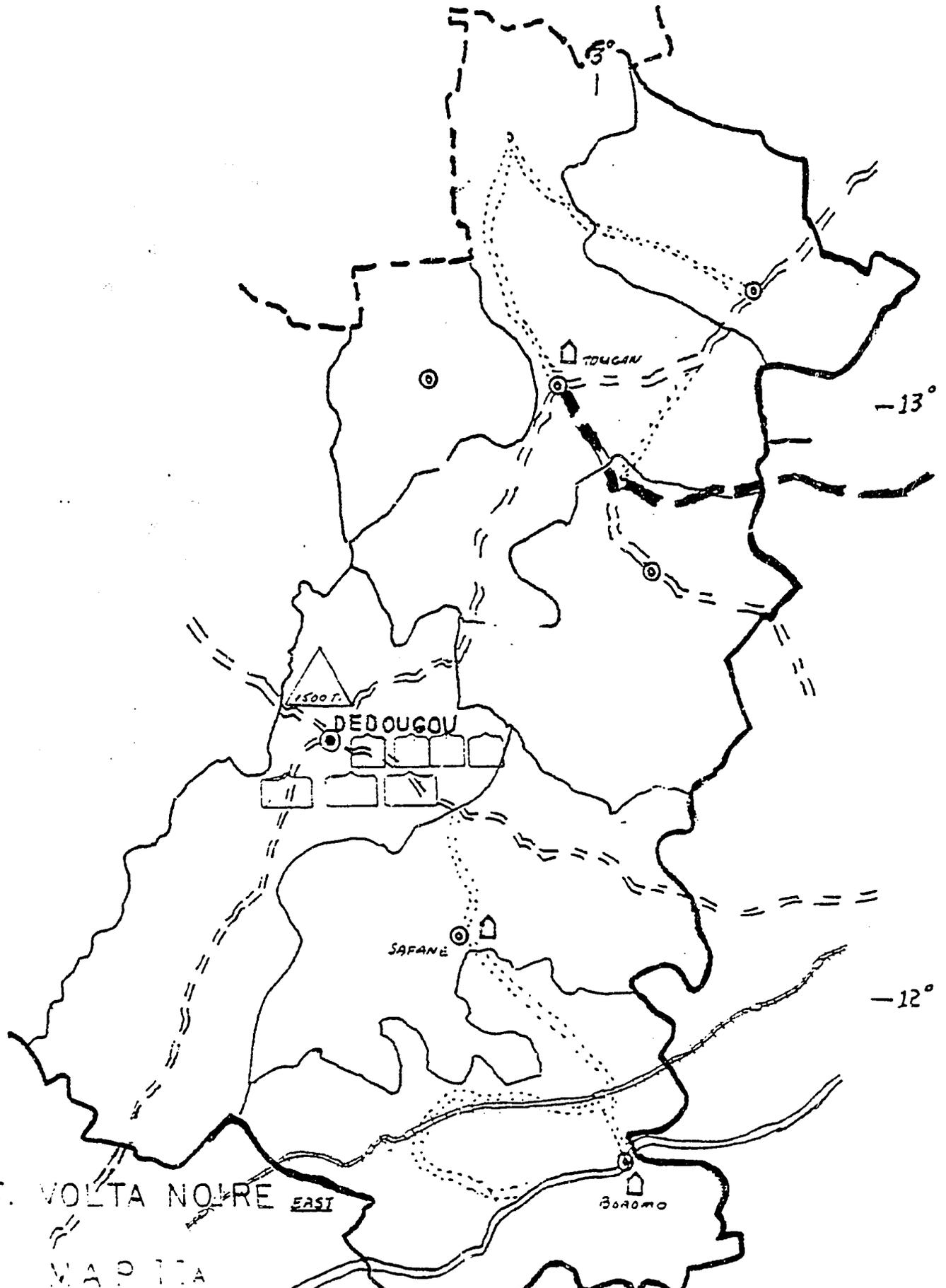
UPPER VOLTA

1
4°



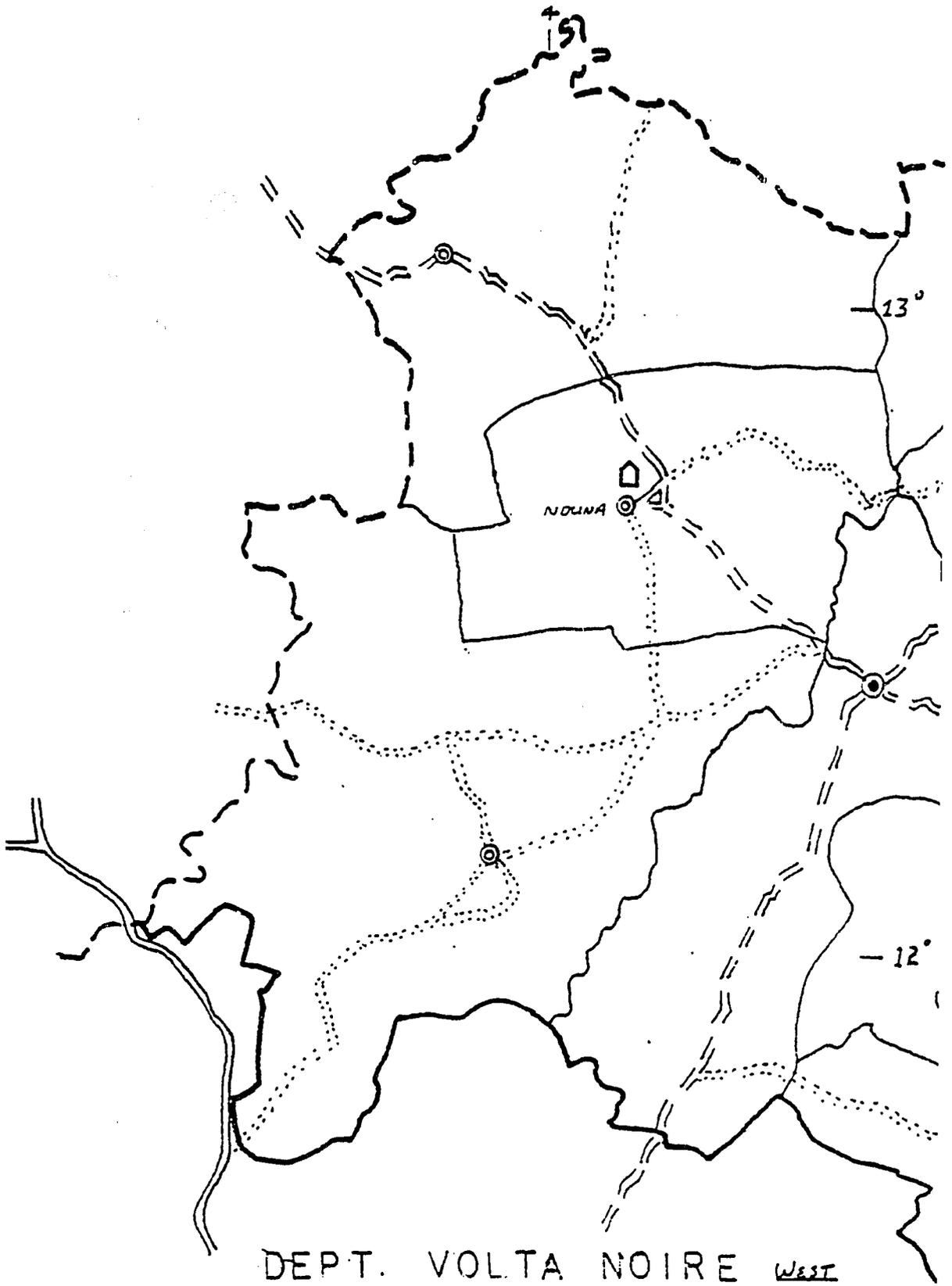
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114



13°—

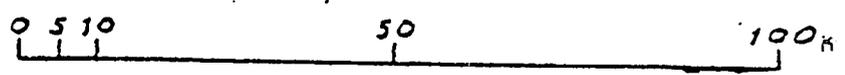
12°—



DEPT. VOLTA NOIRE WEST

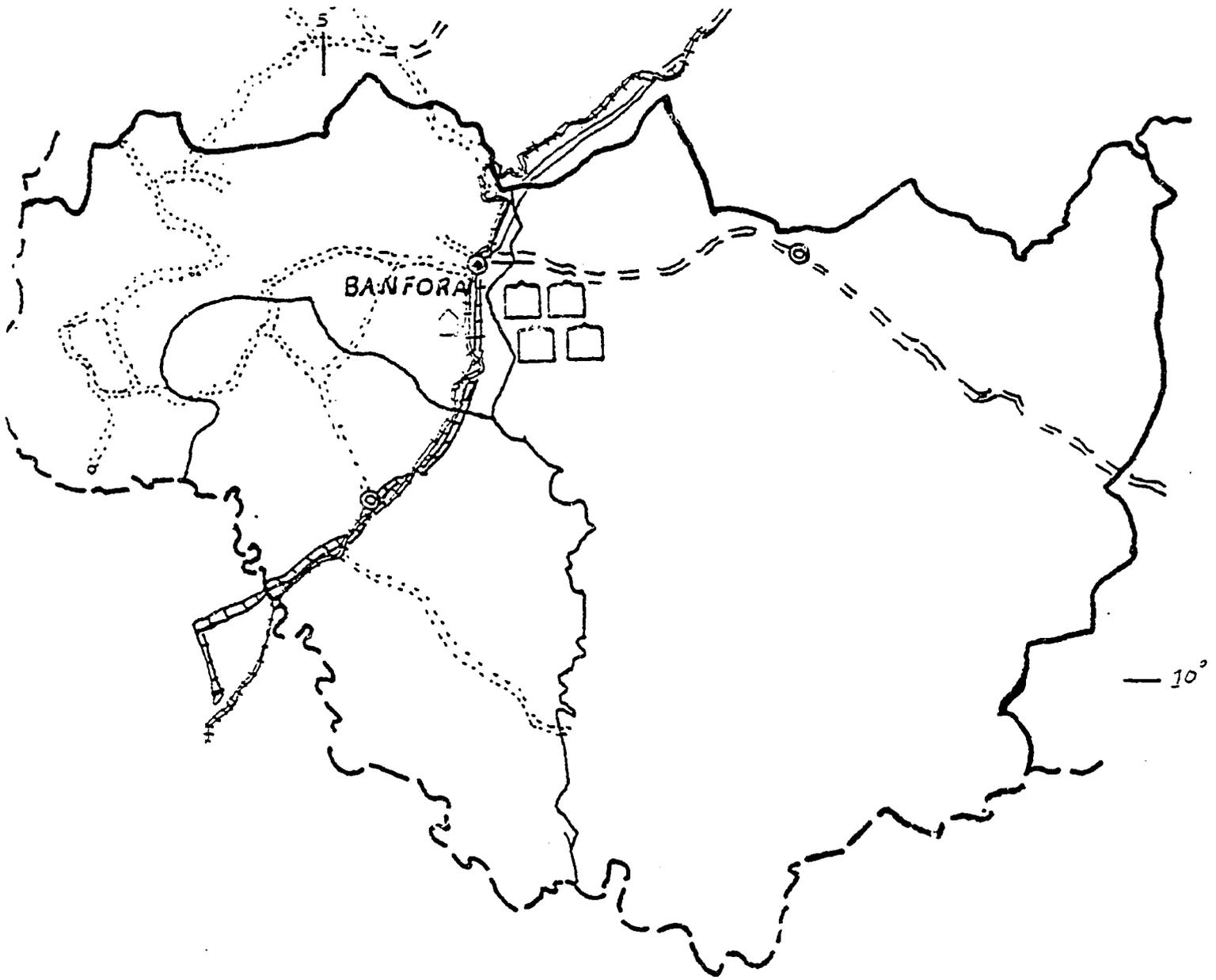
MAP 11A

UPPER VOLTA



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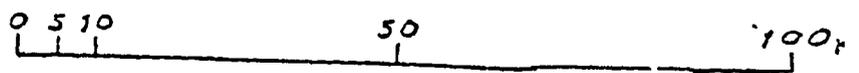
1
5°



DEPT. COMOE

MAP 12

UPPER VOLTA



scale: 1/1000000

116

APPENDIX C
SOURCES

SOURCES

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APPENDIX D
RONCO'S STATEMENT OF WORK

RCNCO'S STATEMENT OF WORK

CONTRACT NO. AID/afr-0243-C-00-1057-00

Scope of Work

A. Objective - The Grain Marketing Development Project is USAID/Upper Volta's response to a request for assistance in improving Upper Volta's grain marketing conditions, increasing their cereal production and improving the prospects of food security in rural areas. The project includes the construction of thirty (30) grain warehouses. The objective of this contract is to obtain assistance in the site selection of the first ten (10) warehouses.

B. Statement of Work - The contractor shall supply a Marketing Specialist whose responsibilities include identifying and ranking the sites for the initial ten (10) warehouses and developing the selection procedure and criteria for establishing the remaining twenty (20) sites. Site selection shall be determined on a profit maximization/cost minimization basis. Among the factors to be considered in the course of the analysis are:

1. Available time series regional production and consumption data,
2. The quantities of grains purchased and sold by the Office National des Cereales (OFNACER) during recent campaigns,
3. OFNACER's likely market share in respective regions,
4. Demographic shifts,

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5. Possible market routes and transportation costs,
6. Market sites and variable storage costs, and
7. Existing OFNACER storage facilities.