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10 DEC 1984

MEMORANDUM FOR: (See Distribution List)

FROM: [redacted] Chief, Strategic Resources Division Office of Global Issues 25X1

SUBJECT: Afghanistan: 1984 Grain Assessment [redacted] 25X1

1. The attached memorandum is the follow-up to our preliminary October assessment of selected crop areas in Afghanistan. It provides a comprehensive look at regional crop conditions, and gives our best estimate of 1984 wheat output, a useful indicator of total food production. It also includes a discussion of Kabul's tenuous food situation. The paper is based principally on analysis of satellite imagery taken during the 1984 crop season, and is augmented with meteorological data [redacted] 25X1

2. This assessment was produced by [redacted] Agricultural Assessments Branch, Strategic Resources Division, Office of Global Issues, with a contribution from [redacted] Office of Near East and South Asian Analysis. [redacted] 25X1

3. Comments and questions are welcome and may be addressed to the Chief, Agricultural Assessments Branch, [redacted] 25X1

[redacted] 25X1

Attachment: Afghanistan: 1984 Grain Assessment [redacted] GI M 84-10219, December 1984, [redacted] 25X1

[redacted] 25X1

SUBJECT: Afghanistan: 1984 Grain Assessment [redacted]

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OGI/SRD/AAB/[redacted] (December 1984)

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Central Intelligence Agency



Washington, D.C. 20505

DIRECTORATE OF INTELLIGENCE

10 DEC 1984

Afghanistan: 1984 Grain AssessmentSummary

A comprehensive analysis of satellite imagery and meteorological data indicates that grain crops this year in Afghanistan suffered moderate damage from adverse weather. Military operations did not have a significant impact on production except in the Panjsher Valley, which produces less than one percent of the total grain crop. We estimate that some 2.7 million tons of wheat--the country's most important food grain--were harvested this year, 300,000 tons less than the estimated output in 1983. About 60 percent of the shortfall is from the dryland crop in the northern plains region, where drought cut production by approximately one-fourth from a year ago. A slight decrease in yields of irrigated crops--caused principally by the drought, but also by military activity--accounts for the balance of the deficit. [redacted]

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Despite the downturn in wheat production, overall food supplies in Afghanistan should remain generally adequate through the winter, assuming that wheat imports match last year's estimated level of 300,000 to 360,000 tons. Nevertheless, serious localized shortages are likely in areas of concentrated fighting--such as the Panjsher Valley--and in remote areas where weather-induced crop damage was most severe. Moreover, Afghanistan's entire food supply chain--from farm to marketplace--remains extremely fragile. A Soviet effort to deny food to the insurgents could quickly lead to more widespread shortages. Wheat imports from Pakistan--an important supplier--may be reduced in the coming months because of Soviet attempts to stem insurgent infiltration from that country, and Islamabad's reduced harvest. The 1985 winter wheat crop--just recently planted--is already being threatened by the carry-over effects of this year's drought. [redacted]

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This paper was prepared by [redacted] Agricultural Assessments Branch, Strategic Resources Division, Office of Global Issues (AAB/SRD/OGI), with a contribution from [redacted] Office of Near East and South Asian Analysis. Comments and questions may be addressed to [redacted] Chief, Agricultural Assessments Branch, OGI, on [redacted]

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GI M 84-10219

Afghanistan: 1984 Grain AssessmentBackground

Agricultural Constraints. Most of Afghanistan is unsuitable for agriculture because of extensive areas of mountains, deserts, and forests. Soils are poorly structured, the arid continental climate--characterized by hot, dry summers and wet, often harsh, winters--severely limits agricultural output, and precipitation in most areas of the country is inadequate to support dryland farming. Furthermore, farming practices are primitive and largely of a subsistence nature. Little use is made of chemical fertilizer, pesticides or new seed varieties. Farm operations are mostly non-mechanized, with men and draft animals providing the basic power needs. [redacted]

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Cropping Patterns. Afghanistan contains approximately 8 million hectares of arable land, less than half of which is cultivated due to limited supplies of water. Some 3.3 million hectares of the arable land are irrigated, but because of fallowing practices, only about three-fourths of this area is cropped each year. Irrigated land produces approximately 85 percent of the country's food and industrial crops. Dryland crops occupy about 900,000 hectares and are concentrated mainly in the foothills of the northern plains region (Figure 1). [redacted]

Grain crops occupy nearly 90 percent of the total cropped area including nearly all the dry land farming. Wheat, mostly winter wheat, is the staple crop in the Afghan diet and takes up about 60 percent of the area sown to grain. Other grains include corn, rice, and barley. Wheat yields are low by world standards, averaging only about 16-17 quintals¹ per hectare on irrigated land and about five to six quintals on dry land. By comparison, Soviet farmers in neighboring Central Asia republics obtained an average of 24 quintals per hectare of winter wheat on irrigated land and 10 quintals on non-irrigated land during the 1976-80 period. [redacted]

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Population Trends. Approximately 3.5 million people, out of a pre-war population estimated at 15.3 million, have fled the country to Pakistan and Iran. Rapid growth, however, brought the population back to roughly 14 million by 1984. The exodus occurred primarily from the provinces bordering Pakistan and, to a lesser extent, from those bordering Iran, according to [redacted] analysis of satellite imagery. Most of the refugees have been from the agrarian and pastoral sectors, which made up 85 percent of the population prior to the Soviet occupation. In addition, many people have migrated to the cities

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¹ A quintal equals 0.1 metric tons. [redacted]

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in order to escape the military conflict in the countryside and to take advantage of better food supplies. [redacted]

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Transportation and Food Distribution Networks. Food distribution and transportation networks are poorly developed in Afghanistan. While military actions may have placed new strains on the system, distribution of food to major markets, or cities, has not been significantly affected according to embassy reporting. The vast majority of farmers and villagers--located great distances by foot trails from any road--are isolated from the principal food markets and have few, if any, grain storage facilities. Although the primary road system--which connects the major cities--has remained intact throughout the Soviet occupation, some isolated insurgent attacks have taken place. Our analysis of satellite imagery indicates that bus and truck movement of food supplies have not been impeded significantly on this primary network. [redacted]

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Impact of the Soviet Occupation

Numerous reports from embassy [redacted] have stated the Soviets have deliberately destroyed crops and disturbed the fragile irrigation system. Extensive imagery covering about 95 percent of Afghanistan's agricultural area does not substantiate the field reporting. According to imagery analysis, it appears that Soviet military actions have not been directed against Afghan agriculture except in the Panjsher Valley, where less than one percent of the total grain crop is produced. We estimate that about three-quarters of the grainfields there were either destroyed or abandoned because of the fighting. For example, crops throughout the valley were burned, including those already cut and shocked, while others suffered damage from military vehicle trackage. This damage implies a military-related loss of about 7,500 tons, or only about three percent of this year's shortfall. [redacted]

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In the rest of the country, imagery shows that:

- o cropping operations from spring through fall of 1984 took place on schedule;
- o irrigation systems--vital to crop production and vulnerable to disruption--were functioning normally;
- o there has been no apparent change in total arable land use since last year--continuing abandonment of agricultural land near the Pakistan border has been offset by increased cultivation in Herat and other provinces. [redacted]

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The Soviets and the Afghan central government are continuing measures begun prior to the Soviet occupation to bolster agricultural output. These include increasing the availability of fertilizer and improved varieties of wheat, the amount of agricultural machinery, and the number of technical advisors. For example, several large farm equipment yards were identified

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throughout the country on satellite imagery in or near the main cities. These equipment yards contain Soviet grain combines, probable forage harvesters, tractors and farm trailers. New equipment was seen arriving at these yards on flatbed trailers several times during 1984. Soviet grain combines were also observed at a major transshipment facility on the Afghan-Soviet border (37-13N 067-25E), probably awaiting shipment to Afghanistan. [redacted]

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1984 Weather Summary

Available meteorological data--although generally sparse and incomplete--indicates that precipitation throughout Afghanistan was about 50 percent below normal during the November 1983-May 1984 period² (Figure 2). This was corroborated by satellite imagery which showed that the country's snowpack, river flows, and lake and reservoir levels were all down from a year ago. Hardest hit was the northern plains region, where virtually all of the non-irrigated crops are grown. Rainfall during the critical February-April period was less than half of normal. Indeed, rain occurred only on 17 days compared to the average of 35 days. [redacted]

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Despite the precipitation shortfall, we believe that total irrigation supplies this year were only slightly less than in 1983. Satellite imagery showed that most of Afghanistan's rivers had enough water to keep irrigation canals fully charged during periods of peak need. Only in a few cases did river beds dry up earlier than normal. Groundwater reserves also appeared generally adequate during 1984. An estimated 20 percent of the irrigation water comes from underground canals--known as karez--and from wells. [redacted]

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1984 Wheat Crop

We estimate the 1984 Afghan wheat crop--the country's most important food grain--to be about 2.7 million tons, 300,000 tons less than last year's estimated output.³ This assessment is based primarily on analysis of satellite imagery, and is supplemented with meteorological data. Total sown area is estimated to be 2.6 million hectares, the same as in 1983. Approximately 95 percent of the country's agricultural areas were analyzed using medium-resolution imagery acquired during the 1984 growing season. In addition, 65 point targets--averaging about

² All precipitation in Afghanistan occurs during the November - May period. [redacted]

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³ Afghan government statistics--normally derived from very limited and unreliable information--put the 1983 wheat crop at 2.9 million tons. [redacted]

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20 square miles each and located throughout the country--were analyzed using high-resolution imagery (Figure 1). [redacted]

Some 60 percent of the wheat shortfall is from the dryland crop in the northern plains region--estimated to be down 25 percent from last year's estimated output of 600,000 tons.⁴ Our preliminary estimate of dryland wheat production--made in mid-October--suggested a 30 percent reduction from last year, but subsequent analysis of additional satellite imagery revealed that crops in the north-central provinces of Balkh, Samangan and Baghlan were slightly better than first estimated. In the rest of the northern plains region, no changes were warranted on the basis of the new imagery; we continue to estimate that wheat yields in the west--in the vicinity of Meymaneh--fell by nearly two-thirds compared to 1983, while those in the east--near Qonduz and Taloqan--were cut by about one-third. [redacted]

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An estimated five percent downturn in wheat output on irrigated land accounts for the remainder of this year's shortfall. The reduction is due primarily to the smaller supplies of irrigation water that resulted from the November-May dryspell, and to a lesser extent from military activity, especially in the Panjsher Valley. [redacted]

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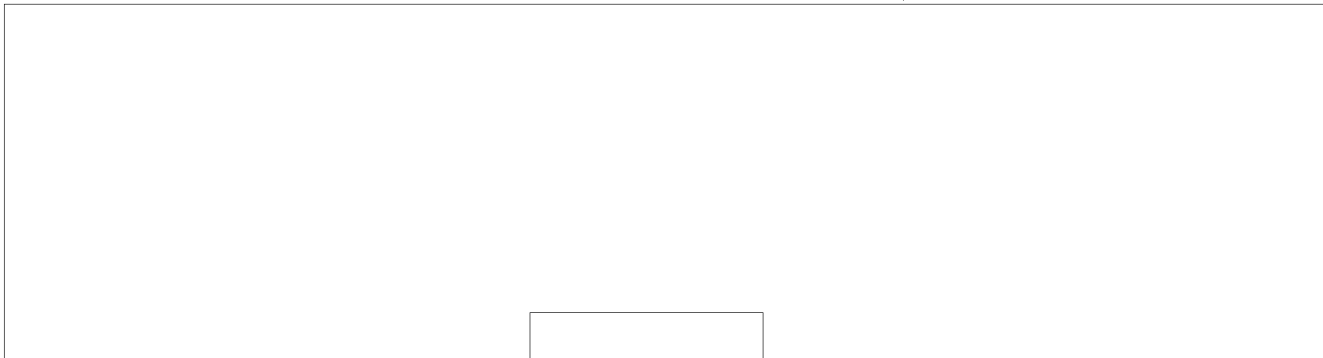
Regional Crop Assessment

Eastern Valleys (Kapisa, Laghman, Konarha, Parvan, Vardak, Ghazni, Paktia, Paktika, Lowgar, Nangarhar, and Kabul). This region, consisting of the 11 provinces surrounding Kabul, contains approximately 30 percent of the country's agricultural land, including some of the most fertile and high-yielding valleys in Afghanistan. It is, however, also the area most affected by the Soviet occupation. The major valleys and basins include Panjsher, Charikar, Nangarhar, Konar, Ghazni, Lowgar, and Khowst. Many of the these valleys have been the sites of heavy military operations. [redacted]

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The long, narrow **Panjsher Valley**, northeast of Kabul, has suffered the most from the Soviet occupation. Satellite imagery taken from May through September 1984 showed that Soviet and Afghan military operations in the valley caused the destruction

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[redacted]

or abandonment of about 75 percent of the grainfields there. Although such losses will have little impact on total Afghan grain output this year--only about 7,500 tons because the valley is only a minor grain producer--they almost certainly will be devastating to the people who remain in the valley. Since 1979, more than half of the population has fled the area because of repeated Soviet attacks, [redacted]

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Most of the damage in the valley is estimated to be a direct result of military operations, including damage caused by armored vehicle trackage, construction of military bivouacs, bomb blasts, and artillery shelling. What appeared to be deliberate burning of grainfields--both before and after harvest--was observed throughout the valley [redacted]. The heavy fighting also led to sizable abandonment of grainfields as the population exodus appears to have continued this year. Post-harvest grain shocks that were observed on early August imagery had not yet been removed from fields by September. Normally, shocks are removed within a few days after harvest in order to prevent yield reductions. [redacted]

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The grain crop in the basin near **Charikar**, 40 miles north of Kabul, was generally as good as in 1983. The rivers and irrigation canals contained water throughout the growing season. Crop damage from armored vehicle trackage and bomb blasts--as observed on imagery--was confined to less than one percent of the cultivated fields, and thus had virtually no affect on overall grain production. This fertile valley traditionally produces surplus grain for the Kabul region during good years and could possibly have done so again in 1984. [redacted]

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The **Nangarhar Valley** surrounding Jalalabad, 40 miles east of Kabul, also appeared to produce a good grain crop in 1984 despite the fact that some agricultural areas near the Pakistan border remained abandoned. Rivers and canals had sufficient water throughout the growing season, and harvesting took place on schedule--from mid-May through early June. Mechanical combine harvesting was observed just west of Jalalabad. Sightings of trucks and animal packtrains throughout the year on the main road through the Khyber Pass indicated that it was operational. [redacted]

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Conditions in the **Konar Valley**, adjacent to the Afghan/Pakistan border, were similar to those in 1983. A few large areas of agricultural land, mostly on the east bank of the Konar River, remained abandoned. Elsewhere, summer crops (corn, rice, and barley) appeared to be doing very well as of mid-July. In addition, mule packtrains were seen on several of the many trails that cross the Afghan-Pakistan border here carrying supplies into the country, almost certainly for the insurgents [redacted]

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Crop yields in northern **Ghazni** and southern **Vardak** Provinces were not as good as last year because of inadequate irrigation supplies. The main river that flows through the city of Ghazni (33-32N 068-23E) dried-up prematurely in early May, leaving some of the irrigation canals without water [redacted]. Several dry irrigation canals were also observed in **Vardak** Province--in the vicinity of Sheykhabad (34-04N 068-45E). [redacted]

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Grain shock analysis indicates that yields around the city of **Kabul** were generally good this year. Some rivers were lower than in 1983, but water flows appeared adequate for irrigation needs. Nevertheless, military vehicle trackage caused minor damage to crops located to the west of the city, and there was some increased abandonment of agricultural land near a few of the larger military installations. [redacted]

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Based on a comparative analysis of grain shocks in **Lowgar** Province, wheat yields there were less than in 1983 [redacted]. Moreover, because the irrigation canals were dry in July, the yields of summer crops probably were reduced as well. Agricultural abandonment did not appear to have increased in the province since last year. [redacted]

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Grain yields in **Paktia** and **Paktika** Provinces, both adjacent to the Afghan-Pakistan border, are expected to match last year's level. Irrigation supplies were adequate throughout the crop season, and no military damage to cultivated fields was evident on imagery. Even so, total production will be below last year's level and far below the provinces' potential because the abandonment of crop land--begun in 1980--continued this year [redacted]

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Northern Provinces (Badghis, Faryab, Jowzjan, Balkh, Samangan, Konduz, Takhar, Badakhshan, and Baghlan). This region, referred to as the "breadbasket" of Afghanistan, contains approximately 50 percent of the country's agricultural land, including nearly all the dryland crops. The drought this spring decreased the yields of dryland crops, mostly wheat, by an estimated 25 percent from 1983. Irrigated crops, on the other hand, appear to have been supplied with enough water from rivers and groundwater reserves to have made a good crop in most areas. The one exception to this was in **Faryab** Province--in the vicinity of Meymaneh--where the main river ran dry by May. As a result, we believe that yields of both dryland and irrigated crops in that province were unusually poor this year [redacted]

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Compared to 1983, we estimate that the yields of dryland crops in the western part of the region--**Badghis, Faryab** and **Jowzjan** Provinces--fell by nearly two-thirds [redacted] while those in the east--**Takhar** and **Badakhshan** Provinces--were reduced by about one-third. In the central part of the region--**Balkh, Samangan,** and **Baghlan** Provinces--yields are likely to be at least as good as last year [redacted]. The war appeared to have had [redacted]

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little effect on agricultural production in these provinces, as no significant military activity was observed in the cultivated areas. Mechanized combine harvesting was observed in several provinces. [redacted]

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Central Mountain Provinces (Bamian, Ghowr, and Oruzgan).

This area of steep mountains and small narrow valleys, also known as the Hazarehjat Region, contains less than five percent of the country's agricultural land. Analysis of a limited amount of imagery taken during 1984 indicates that there was probably enough water in the rivers to satisfy irrigation requirements. Late September imagery showed good summer crop yields in the vicinity of the **Bamian Valley** (34-50N 067-50E). The effects of the war appeared minimal in this region. [redacted]

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Western Border Provinces (Herat, Farah, and Nimruz). This region, adjacent to Iran, is nearly all desert and contains only about 10 percent of the country's agricultural land. Crops are concentrated along the few rivers which flow out of the central mountains. Despite heavy, ongoing military activity in this region, especially in the Herat area, agricultural output appears to have been unaffected. There is no evidence from imagery of deliberate crop burning or destruction of irrigation systems by military forces. Analysis of straw shocks in **Herat** Province indicates little, if any change in grain production between 1984 and 1983. Lower yields resulting from a reduction in the amount of irrigation water available from the Harirud River probably was offset by a slight expansion in the area sown to grain this year [redacted]

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Numerous pieces of Soviet farm machinery--including grain combines, probable forage harvesters, small tractors, and farm trailers--were observed inside a large farm equipment yard in the city of Herat [redacted] New equipment was observed arriving on flatbed trailers several times during the year. [redacted]

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Several villages, along with the associated agricultural land, were abandoned in **Nimruz** Province adjacent to the Iranian border. Similar abandonment was also observed here last year and appears to be no greater this year. [redacted]

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The South (Helmand, Qandahar, and Zabol Provinces). Like the Western Border Provinces, these provinces are mostly desert and contain approximately 10 percent of Afghanistan's cultivated land. Crops are concentrated along the Helmand and Arghandah Rivers, and in a few groundwater-dependent areas along the southern edge of the central mountains. This region experienced heavy military activity during 1984, but as in Herat, neither crops nor irrigation systems were deliberately attacked, according to imagery analysis. [redacted]

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Grain yields here are expected to be slightly less than in 1983 even though the main rivers generally had enough water for irrigation needs [redacted] A few secondary rivers as well as

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[redacted]

some groundwater reserves ran short of water during the summer, thereby reducing the yields of summer crops [redacted]

Tenuous Food Situation

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Based on our estimate of the 1984 Afghan wheat crop--2.7 million tons--overall food supplies in Afghanistan should remain generally adequate through the winter, although serious localized shortages are likely in areas of concentrated military activity--such as the Panjsher Valley--and in remote areas where drought cut crop output markedly. This outlook assumes that wheat imports this year from the USSR and Pakistan will reach last year's estimated level of 300,000 to 360,000 tons.⁵ Afghanistan was generally considered self-sufficient in wheat supplies in 1976, when wheat production was 2.9 million tons and the population was roughly the same as today. [redacted]

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Historically, many severe food shortages in Afghanistan have originated in the dryland agricultural regions. Drought not only reduces grain production drastically but also desiccates the grazing pastures used by the nomadic herdsmen who make up about 10 percent of the population. When this occurs the farmers and herdsmen face possible starvation because they typically reside in remote regions with poorly developed food markets and transportation networks. Indeed, previous food aid has usually gone to the cities first even though the major need was in the remote countryside areas. More recently, Soviet operations have caused some disruptions in food availability, but have not significantly reduced total supply levels. [redacted]

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Since the Soviet occupation, Kabul has nearly doubled its imports of foreign grain as a means to alleviate food shortages, especially in urban areas. This policy appears to be working. The US Embassy in Kabul reported in October that food supplies there--including meat, fruits and vegetables, and staple items--were roughly equal to the adequate levels of a year ago. In addition, the average level of all food prices in Kabul, while climbing dramatically in the past four years, has not risen any faster than nonfood items, according to spot price surveys and official government statistics (Figure 3). Although information on the food situation in the countryside is fragmentary at best, State Department personnel who recently interviewed Afghan refugees in Pakistan concluded that few, if any, areas of Afghanistan were facing a serious food supply problem. [redacted]

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⁵ Soviet and Afghan press reports indicate that wheat imports from the USSR in 1983 were 160,000 to 180,000 tons, most of which was sent to the major cities, especially Kabul. [redacted]

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[redacted] 140,000 to 180,000 tons of wheat are imported annually from Pakistan through unofficial channels. Virtually all of this grain is destined for rural areas outside the control of the Afghan government. [redacted]

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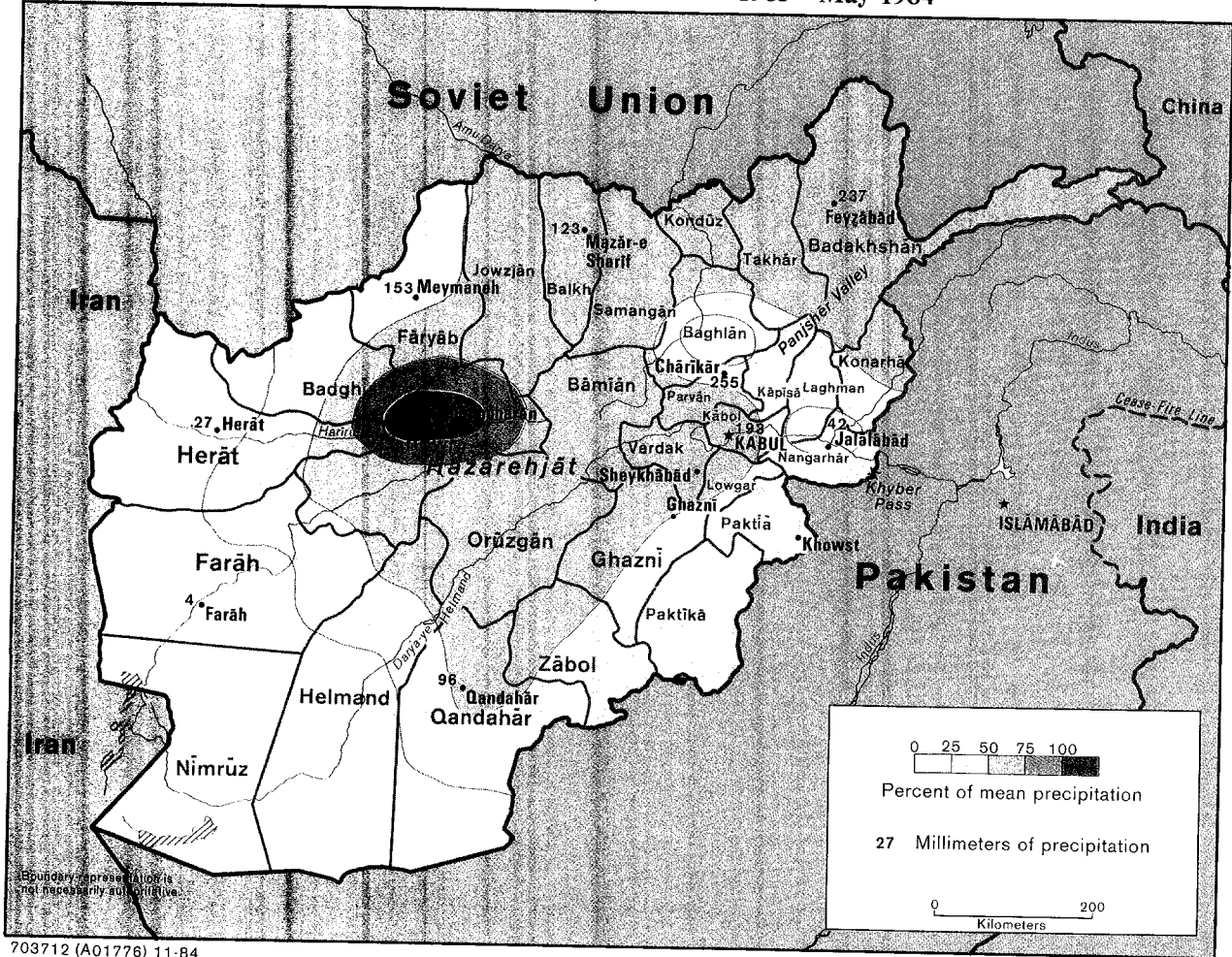
[REDACTED]

Even so, the entire Afghan food supply chain--from the farm to the marketplace--remains fragile. An escalation in the fighting or a Soviet effort to disrupt the food distribution network could easily upset the tenuous balance, thereby leading to more widespread shortages. Moreover, recent Soviet efforts to stem insurgent infiltration from Pakistan, combined with increased transportation costs and Islamabad's reduced wheat harvest may result in smaller wheat imports from that country. Finally, this year's drought has greatly depleted the water reserves upon which the 1985 winter wheat crop--just recently planted--depends for good germination. As a result, the crop is already extremely vulnerable to moisture stress. Without at least average snowfall this winter, Kabul almost certainly will be faced with a harvest shortfall again next year. [REDACTED]

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Figure 2
Percentage of Mean Precipitation in Afghanistan, November 1983 - May 1984

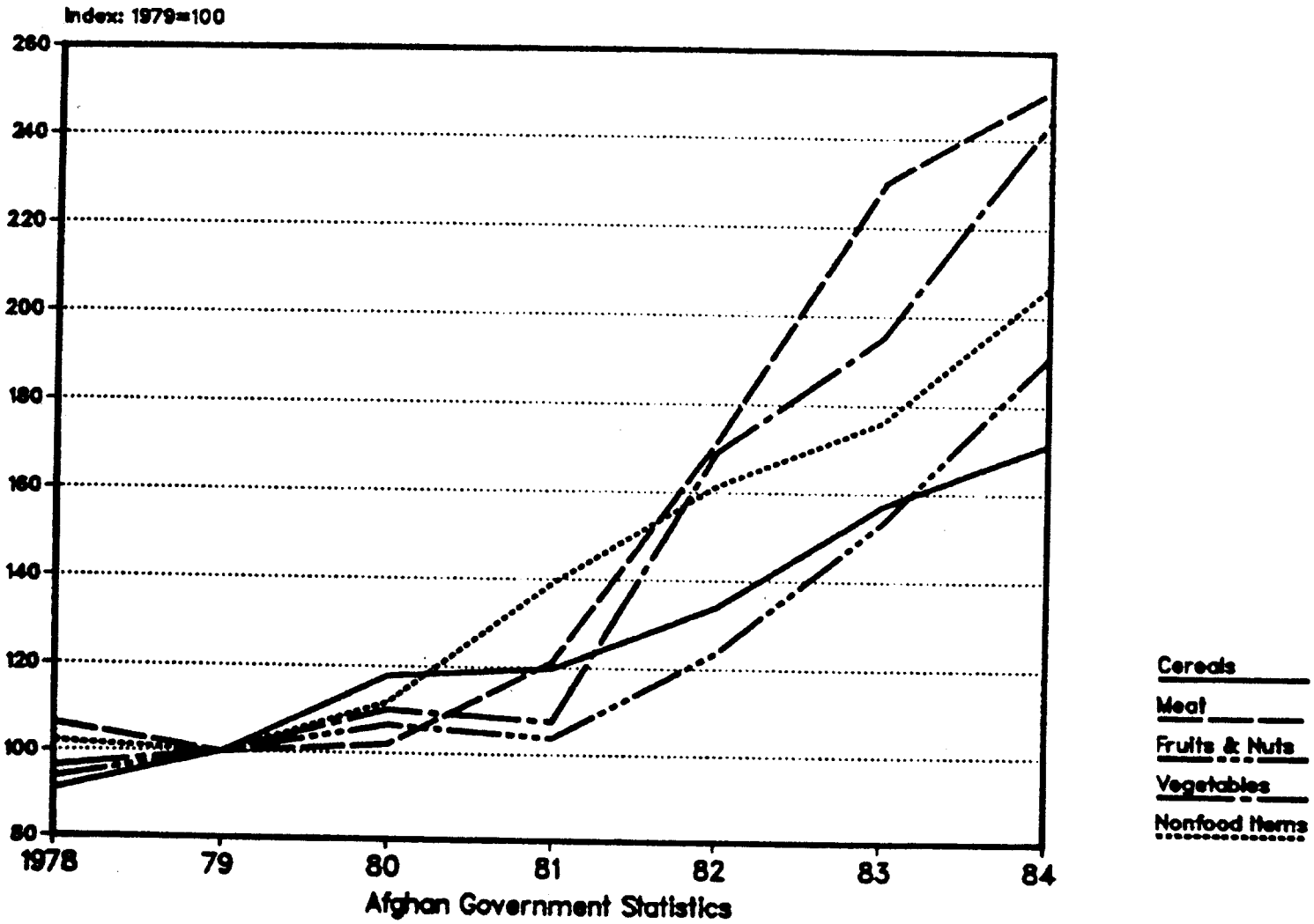


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FIGURE 3. Afghanistan: Kabul Prices Index^a



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