

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT DATA SHEET	1. TRANSACTION CODE <input type="checkbox"/> A = Add <input checked="" type="checkbox"/> C = Change <input type="checkbox"/> D = Delete	Amendment Number 1	DOCUMENT CODE 3
2. COUNTRY/ENTITY Egypt	5. PROJECT NUMBER 263-0037		
4. BUREAU/OFFICE NE/PO	5. PROJECT TITLE (maximum 80 characters) Grain, Tallow, Oil and Fats		

6. PROJECT ASSISTANCE COMPLETION DATE (PACD) MM DD YY 12 31 85	7. ESTIMATED DATE OF OBLIGATION (Under "D" below, enter 1, 2, 3, or 4) A. Initial FY 77 B. Quarter 4 C. Final FY 85
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A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FY	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total						
(Grant)	()	()	()	(70,000)	()	(70,000)
(Loan)	(42,000)	()	(42,000)	(42,000)	()	(42,000)
Other U.S.	1.					
	2.					
Host Country		21,292	21,292		41,000	41,000
Other Donor(s)						
TOTALS	42,000	21,292	63,292	112,000	41,000	153,000

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) SA	159		063		42,000	70,000		70,000	42,000
(2)									
(3)									
(4)									
TOTALS					42,000	70,000		70,000	42,000

10. SECONDARY TECHNICAL CODES (maximum 5 codes of 3 positions each)	11. SECONDARY PURPOSE CODE
12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)	
A. Code B. Amount	

13. PROJECT PURPOSE (maximum 480 characters)

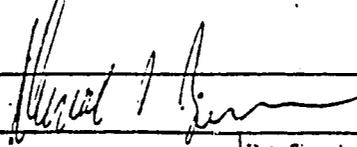
TO PROVIDE ADEQUATE AND EFFICIENT HANDLING, STORAGE AND DISTRIBUTION FOR FOOD GRAINS, TALLOW, OILS AND FATS FOR THE NEEDS OF THE PEOPLE OF THE ARAB REPUBLIC OF EGYPT.

14. SCHEDULED EVALUATIONS Interim MM YY MM YY Final MM YY 06 8 6	15. SOURCE/ORIGIN OF GOODS AND SERVICES <input checked="" type="checkbox"/> 000 <input type="checkbox"/> 941 <input type="checkbox"/> Local <input type="checkbox"/> Other (Specify)
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16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment)

COMBINATION OF:

1. INCREASE IN FUNDING LEVEL FOR ORIGINAL PROJECT SCOPE; AND
2. EXPANDED SCOPE FOR SAGHA GRAIN SILOS SUBPROJECT.

17. APPROVED BY	Signature  Title Donald S. Brown Director, USAID/Egypt	18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION MM DD YY 1 7 8 2
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EGYPT - Grain, Tallow, Oil and Fats Storage and Distribution

AMENDMENT 1

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UNCLASSIFIED
AID-DLC/P-2257
_____, 1982

MEMORANDUM FOR THE WORKING GROUP ON BILATERAL ASSISTANCE:

SUBJECT: Egypt - Grain, Tallow, Oils and Fats Storage and
Distribution

Attached for your review is a recommendation to amend A.I.D. Project No. 263-0037 by authorizing a grant to the Government of Egypt (the "Grantee" or "G.O.E.") of an amount not to exceed Seventy Million United States Dollars (\$70,000,000) to help in financing certain foreign exchange costs of goods and services required for project expansion and for cost overruns. Grant funding under the Project Amendment will supplement loan funds previously authorized, and will assist the Government of Egypt in developing an efficient system for the receipt, storage and distribution of food grains, tallow, vegetable oil and fat. Total Project funding is not to exceed One Hundred and Twelve Million United States Dollars (\$112,000,000).

-1-

EGYPT: Grain, Tallow, Oils and Fats Storage and Distribution
Amendment No. 1

I. SUMMARY AND RECOMMENDATIONS

- 1.01. Grantee: The Government of the Arab Republic of Egypt. (G.O.E.).
- 1.02. Implementing Entity: The General Authority for Supply Commodities (GASC) of the Ministry of Trade and Supply.
- 1.03. Beneficiary/Operating Entity: The General Company for Silos (GCS) of the Ministry of Trade and Supply.
- 1.04. Proposed Grant Amount: \$70,000,000
Existing Loan Amount: \$42,000,000
Authorized: September 27, 1977.
- 1.05 Cost of Amendment No. 1: Seventy million dollars is required to meet the inflation costs of completing the 50,000 MT silo complex at Safaga, to meet funding shortfalls in project funds caused by increased costs of other subprojects, and to expand the Safaga silo complex to a 100,000 MT facility by using an American/Egyptian joint venture contractor to supervise, manage and have responsibility for sub-project procurement and construction.

Inflation since 1977 has added \$13.2 million to the cost of construction for the 50,000 MT grain storage complex at Safaga. In Alexandria the additional costs of completing the TOF facility totaled \$16 million over original projections and reduced the \$24.4 million in funds available in the loan for Safaga to approximately \$8.4 million. This funding shortfall must be eliminated to complete and expand the Safaga silo facility originally authorized by A.I.D.

The decision to expand the Safaga complex to a 100,000 capacity MT to meet current grain import levels will require an additional \$10.3 million. One additional cost factor to the Safaga Project is the proposal to shift construction management control to an American

Contractor through the use of an American/Egyptian joint venture arrangement.

The costs of inflation, construction management inputs, 50,000 MT expansion contingencies, require an additional cash need of \$70 million. Total project funding for all five subprojects, loan and grant, will be raised to One Hundred Twelve Million U.S. Dollars (\$112,000,000) and an Egyptian cash contribution of Fifty-One Million Five Hundred Thousand United States Dollars (\$51,500,000) equivalent in local currency, which will be supplemented by in-kind contributions of land, pier, rail and other capital.

- 1.06.1 Original Project Description: The original Project was funded under Loan Agreement No. 263-K-041 which was authorized and signed in September 1977. A.I.D. funded only the foreign exchange costs of the Project. The Project consisted of five independent subprojects:

	<u>U.S. DOLLARS</u>	<u>EGYPTIAN POUNDS</u>
a. Tallows, Oils and Fats Facility (TOF)	\$ 9,324,000	LE 2,655,000
b. Quay 81/82 Grain Bagging System	6,770,000	1,538,000
c. Safaga Grain Silos - 50,000 MT storage capacity	24,127,000	10,687,000
d. Conveyors for Bagged Grain	572,000	7,000
e. Laboratory Equipment for Grain Testing	<u>63,000</u>	<u>2,000</u>
Total Costs (1977)	US\$42,000,000	LE 14,889,000

See Section 4.07, supra, which addresses the current status of these subprojects.

1.06.2 Project Amendment Description

Except as amended by this document, the original Project Paper (AID-DLC/P-2257) and Project Authorization of September 27, 1977, remain as approved. This amendment will:

- a. offset inflation and unanticipated high costs resulting from a three year delay in the start up of the original 50,000 MT TOF facility at Safaga; and,
- b. permit an additional storage capacity at Safaga of 50,000 MT to raise the total grain storage capacity to 100,000 MT.

1.07 Project Amendment Purpose: To enable the G.O.E. to provide adequate and efficient handling and storage facilities at Safaga, Egypt, for grain destined primarily for the people of Upper Egypt.

1.08 Environmental Issues: None. The environmental assessment made for the original project remains valid as originally approved. It will not be significantly affected by the increased storage capacity at Safaga being funded by this Amendment. (See Annex L).

1.09 Grant Application: The G.O.E. has requested that A.I.D. meet its commitment to complete construction of the 50,000 MT silo complex and provide additional funds to expand the complex to 100,000 MT. (Annex A).

1.10 Issues:

(A) Funding Increase. Should A.I.D. provide additional funds for the Safaga silo complex when the final estimate is three (3) times the original estimate?

The final costs for Safaga have increased because of: (a) inflation since 1977; (b) the proposals to double the size of the Grain Complex; and (c) the decision to use an American/Egyptian joint venture contractor. Each of these factors has been examined and found to be reasonable, considering the remote site of the Project and the need to meet the grain storage requirement of Upper Egypt.

There is a demonstrated need for the 100,000 MT Safaga silo complex. Currently, there is no grain storage capacity at Safaga, the entry port for grain destined for Upper Egypt. Grain imports into Safaga have also greatly exceeded prior estimates, and excessive grain losses result from open storage and inadequate bagging facilities. A 50,000 MT facility will not meet the requirements imposed by the growing import levels of grain at Safaga because it will lack storage capacity and the equipment cannot handle the throughput rates for the quantity of offloaded grain. The 100,000 MT facility funded under this amendment will meet these needs. Failure to approve the proposed complex would have serious consequences since AID has a prior commitment to fund a 50,000 MT silo facility for Safaga. Further, the benefits from this commitment can be maximized by funding an additional 50,000 MT storage capacity with comparative minimal costs.

(B) Implementation. Should an American contractors be used for the Safaga complex, considering this approach requires some additional dollar funding but would provide much better assurance that the construction schedule would be maintained.

Implementation of many A.I.D. funded projects in Egypt to date have been seriously behind schedule except for those Projects where U.S. contractors have a major construction role. GASC has indicated it will approve the use of a joint U.S./Egyptian construction contractor because the Government of Egypt has placed a high priority on upgrading the skills of local contractors. A joint venture would therefore meet the interests of the G.O.E. and A.I.D. by assuring a major role for a U.S. contractor and an opportunity for a local contractor to acquire new construction skill and experience. The savings of inflation cost and overruns due to project delays and the added benefits accruing for early completion more than offset the additional funds of using a joint venture contractor to hold primary implementation responsibility for the Project. The remoteness of the Safaga site and the need for quality control emphasize the benefits that may accrue from a joint venture with a U.S. contractor holding major responsibility for the Project.

(C) G.O.E. Management Responsibility. Does the organizational structure of GASC lend itself to timely implementation of complex projects such as the Safaga grain silo facility?

The creation of a special management unit in the GASC with authority to oversee Project responsibility for Safaga will avoid prior project oversight difficulties. USAID and GASC have held extensive discussions on the pressing need for GASC to devote continuous attention to overseeing the Safaga silo project. GASC has responded by appointing a Project Manager and is now creating a special management unit for Safaga. This unit will assume the implementation duties associated with Safaga and will work with USAID to assure proper Project oversight.

1.11 Mission Recommendation: USAID/Cairo recommends that this grant be authorized.

USAID Project Committee:

<u>OFFICE</u>	<u>NAME</u>
DRPS/IDPS	A. de Graffenreid, Project Officer
DRPS/IDPS	R. Cook, Project Engineer
DRPS/IDPS	R. Rousseau, Financial Officer
LEGAL	B. Spielman/B. Bryant, Legal Officer
CONTROLLER	B. Kramer, Financial Officer
DPPE/PAAD	J. Chang, Economist

II. BACKGROUND

2.01 Safaga Site Selection:

A.I.D. authorized the Safaga grain storage complex in September 1977 as a subproject of the overall Grain, Tallow, Oil and Fats Storage and Distribution Project (A.I.D. Project No. 263-0037). Its conceptual basis originated in the "Master Plan for the Development of Egyptian Storage and Distribution System for Food Grains" which was completed by the engineering and design contractor, Black and Veatch International (BVI), in September 1976. The Master Plan, as revised in 1978, selected the Safaga port as the site for a new grain silo facility to serve Upper Egypt because of its favorable geographic position relative to port calls on the Red Sea and to existing and proposed distribution networks for Upper Egypt. (Annex F). In this regard, it should be noted that almost all wheat currently imported into Egypt at Red Sea Ports comes from suppliers in the Pacific Ocean region. Safaga has also been used on occasion by U.S. grain exporters from the West Coast.

Selecting Safaga as the principal port produced cost savings by reducing the ocean transit time and inland transshipment costs of grain to Upper Egypt from northern ports. Safaga is also preferable to other Red Sea ports because of the port congestion at Port Suez and because it is able to receive larger grain carrying vessels, e.g. those with a draft of 73 feet. Alexandria, the only other alternative to the congested Red Sea ports, can only accommodate vessels with drafts up to 47 feet and it too remote from Upper Egyptian flour mills.

2.02 Construction Plan:

In 1978, a two-phase silo project was recommended for Safaga. Phase 1 consisted of the basic 50,000 MT storage facility which was originally encompassed in the Project Paper and authorized as an A.I.D. subproject. Completion of the 50,000 MT facility is now expected at the end of 1984. (Annex H). Phase 2 was to provide an additional storage capacity of 50,000 MT and was to commence during the construction of Phase 1. Completion of the additional 50,000 MT facility was expected to occur approximately one year after

the initial facility. Undertaking both units simultaneously under a revised Project could result in full operation of both units by June 1985, which would be six (6) months ahead of the current schedule.

2.03 Grain Imports - Safaga:

A. Grain Handling.

All wheat that currently arrives at Safaga is transhipped to flour mills in Upper Egypt. The wheat is offloaded either offshore onto barges and lightered to the quay for unloading or directly at the pier from the ships by four (4) small pneumatic grain unloaders. Grain is then put into four (4) small surge bins or on the ground where it is bagged, by hand, for shipment to mills in Upper Egypt. (Annex I). To meet the throughput levels of bagging 1,100,000 MT to 1,500,000 MT of wheat, highly intensive labor using double shifts is worked year around.

B. U.S. Grain Shipments:

Grain currently exported to Egypt by U.S. suppliers is now offloaded at Mediterranean ports such as Alexandria. The Safaga port is now used primarily to receive grain shipments from suppliers in the Pacific. The capacity to store grain at Safaga will enable: (a) larger amounts of grain to be handled at Safaga; and, (b) U.S. suppliers to ship to Safaga from West Coast ports in the U.S. if this routing will reduce shipping costs. In this regard, the American Wheat Growers Association has indicated its support for the Safaga grain handling complex.

C. Forecasts:

The 1978 Master Plan had forecast a throughput of 650,000 MT tons of wheat at Safaga by 1985, which could be handled by a 50,000 MT facility with an annual turnover of 13 times. According to official G.O.E. import statistics, Safaga had a throughput in excess of 1,100,000 MT in each of the years 1979 and 1980. In 1981, an estimated 1,200,000 MT to 1,500,000 MT of wheat are expected to be offloaded at Safaga. Using the same turnover rate of 13 times, a storage capacity of 90,000 to 115,000 MT is needed now.

The original estimate for grain imports was based on a projection from grain imports starting in 1977. Prior to that time, the Safaga port was a G.O.E. naval facility and was not available for grain imports; once the port reverted to civilian authorities, grain previously offloaded at Port Suez was diverted, at an increasing rate over the years, to Safaga. The previous forecast could not take such a dramatic diversion into account because there was no prior data on which to substantiate a projection of the current magnitude of grain imports. It should also be noted that the import level at Safaga can be raised or lowered through government intervention by diverting grain tankers to Safaga to maintain maximum use of the proposed facility. Based on discussions with GASC and their consultants the levels of wheat off loaded at Safaga can be expected to rise in the future years.

These grain import levels reflect both the growing consumption by Egypt's population increase and the continuing net deficits between local grain production and consumption levels of wheat. The import levels also reflect the growing demand for baked products. Although there is no current data available which analyzes these projected demand patterns, the GASC has noted that the current demand now exceeds the projected demand levels for wheat that were forecast in the 1978 BVI Master Plan. The 1978 study forecast a net wheat deficit of 4.6 million metric tons (MMT) in 1981, which proved accurate, and a deficit of 5.3 MMT in 1985 and 9.7 MMT in 2000. GASC expects these deficits will grow as consumption patterns reflect increased use of wheat in the Egyptian diet. GASC does not expect local production to decrease this deficit significantly and therefore believes that the Safaga facility has a long-term utility.

2.04 Long Term Requirement:

There is discussion in Egypt of the possibility of closer economic ties between Egypt and the Sudan that would enable Egypt to become more self-sufficient in foodstuffs by using the Sudan as the major source of agricultural imports for Egypt. It is true that the Sudan has an agricultural export potential. However, using Sudan as the major supplier of wheat and grain to Egypt and replacing overseas sources is a remote and unlikely prospect. First, the Sudan cannot fully replace overseas grain sources. Second, even if full economic integration between Egypt and the Sudan occurs, the Safaga port

can be expected to complement any resulting Egyptian/Sudanese trade patterns, considering the lack of rail and highway links between the two countries. The Safaga grain storage complex will continue to be a long term requirement for Egypt.

III. SUB-PROJECT DESCRIPTION

3.01 Current Requirements for a 100,000 MT Facility:

Current import levels of wheat at Safaga require that substantial emphasis be given to completing the A.I.D. authorized grain silo subproject. The original proposal for a 50,000 MT grain silo facility at Safaga was based on the premise that imported grain at Safaga would not exceed 650,000 MT by 1985. It also anticipated that a throughput level in excess of 1,100,000 MT would not be reached until the year 2000 and that this increased level of imports would be handled by a phase 2 50,000 MT addition to the silo complex. As explained in paragraph 2.02, above, these levels were vastly underestimated primarily because of inadequate data since the Safaga port had not been used to receive grain imports prior to 1977.

Since grain imports into Safaga now exceed 1,100,000 MT, the two phase construction plan for the silo complex must be revised, consolidated, and implemented immediately. Accommodating the increased import levels at a 50,000 MT storage silo would require a turn over rate of 20 times, which is not practical or desirable under the original design because of the prohibitive operating and maintenance costs at that rate. Constructing a 100,000 MT facility, together with design changes, will increase the capacity of the grain silo complex to handle grain imports of 1,200,000 MT annually. This increased storage capacity will enable the GASC to operate the facility at the projected turn-over rate of 13 times and also provide the GASC with greater flexibility in planning and distributing grain imports.

Also, the current demurrage, grain loss and transportation costs can best be reduced to acceptable levels to provide maximum benefits by constructing a 100,000 MT complex capable of handling the grain import requirements for Upper Egypt. A more detailed cost analysis is provided in Section 4.02.1, supra.

3.02 G.O.E. Commitments:

As a part of its commitment under the Project to meet the Conditions Precedent in the original loan and in response to the rapidly expanding shipping load at Safaga, the G.O.E. has funded and initiated construction of a new deep water marginal quay to serve the facility. The improvements are approximately 40% complete. Rock interference in the approach channel has been removed, and an on-shore silo site is available and has been transferred to the Ministry of Supply. These improvements will permit two (2) grain ships to be unloaded simultaneously at the Safaga quay and reduce or eliminate the need for barge use in unloading wheat. To avoid any question that the quay improvements will structurally withstand the load factors involved, which has arisen in the quay construction for the silo complex under Project 263-K-028 at Alexandria, the GASC is working with its consultants and the Port and Lighthouse Authority to obtain verification that the quay and the silo complex will withstand the anticipated load designs.

Two gas turbines have also been put into operation at Safaga for the port area and provide adequate power for the proposed expanded 100,000 MT grain silo facility. This is also part of the activities required of the G.O.E. under the original Conditions Precedent. Although water is not needed to operate the facility, an underground water storage tank is under construction together with backup water piping to furnish potable water for use in construction and for personnel working for the Safaga Port. Once the silo complex becomes operational, GASC will provide bulk wheat trucks to tranship grain to flour mills in Upper Egypt. A rail line is also being constructed to the Safaga port which will increase the throughput capacity; it is now 40% complete and is expected to be fully completed by January 1985 before the Safaga silo complex is operational.

3.03 Grain Shipments:

Grain losses at Safaga are approximately 5%, as described in Section V. These losses could be greater but data is not obtainable from official sources to verify any other estimate. These losses result during unloading and from inadequate storage and bagging. Losses also occur during shipment to Upper Egypt from broken bags and spillage. The

Project will reduce these losses by introducing modern unloading and storage facilities and by shipping wheat in bulk when bulk facilities are available at the mills. The Master Plan adopted by the G.O.E. proposes to introduce modern enlarged thirty (30) day storage facilities at the flour mills (not funded under the Project) to reduce storage losses and increase the throughput of wheat at Safaga. At present, only a few flour mills in Upper Egypt are capable of handling bulk wheat shipments from Safaga. While interim remedies are available, a follow-on program will be required to enable the flour mills in Upper Egypt to receive bulk wheat shipments. A discussion of such a program is currently underway between GASC and USAID, and a project or a C.I.P. program is expected to result by mid 1982.

Bulk wheat trucks are currently being obtained outside the Project by the G.O.E. to handle bulk wheat shipments from Red Sea ports; the G.O.E. plans to make these trucks available for use at Safaga upon completion of the silo complex. Twenty (20) temporary bagging conveyors and bagging stations are being purchased to relieve the overburdened bagging process and will be available for use until the silo complex is completed.

3.04 Project Objectives:

The 100,000 MT silo storage complex, which includes modern pneumatic unloaders and bagging facilities, will enable the G.O.E. to expand their off loading and storage capacity at Safaga. It will also reduce losses of wheat resulting from off loading, surge and ground storage, and hand bagging operations, and it will effect savings in bagging operations by adding the capacity to handle and ship wheat in bulk. By expanding these capacities, and the quay to enable two ships to be offloaded simultaneously, offloading time will be reduced effecting savings in demurrage and grain handling costs. Equally important, the expanded storage facilities will enable the G.O.E. to take advantage of world wheat market conditions and wheat price situations.

3.05 Training:

An integral part of the Safaga grain handling complex will focus on management, operation, and maintenance of the plant. GASC recognizes the need to permanently place highly competent personnel at Safaga because its remote location does

not lend itself to on-going close support from GASC offices in Cairo. GASC is now selecting these personnel on the basis of both experience and on family ties to the Safaga area.

The joint venture construction contractor will be required to establish a training program for key management personnel and for plant personnel in operation and maintenance of the facility. It is preferable to hold in-country training programs, but some personnel may be trained in the U.S. for periods up to two months.

IV. Financial Plan and Analysis

4.01 Overall Financial Plan:

After this subproject amendment, total project funding for the Grain, Tallow, Oil and Fats Project will be \$153 million of which 37% will be provided by the G.O.E.

The Safaga subproject funding will total \$108.6 million. Of this amount \$70 million will be provided by AID in this amendment together with \$8.4 million in remaining funds in the Project. The G.O.E. will provide \$30.2 million U.S. dollar equivalent in local currency, and in-kind contributions which uses an actual October, 1981 foreign exchange rate of L.E. 1.00 = U.S. \$1.20 instead of possible projected exchange rates. An analysis of the amended Project cost is presented in table 4.1, following this page.

As shown in table 4.1, the costs of all subprojects, with the exception of the lab equipment, have risen over the original estimates provided in the September 1977 Project Paper. These cost increases are attributable primarily to inflation costs since 1977, but also result from unexpected high costs of construction for the TOF facility at Alexandria. Nevertheless, currently available project funds are sufficient to complete all subprojects except the Safaga Grain Silo Complex.

TABLE 4.1
SUMMARY COST ESTIMATE AND FINANCIAL PLAN
(\$ THOUSANDS)

Subprojects	(1) Original Project Costs		(2) Additional Costs		(3) (1)+(2)=(3)=(4)+(5) Total Costs		(4) Financed From Original Project		(5) Financed From Project Amendment	
	AID	GOE	AID	GOE	AID	GOE	AID	GOE	AID	GOE
1. Alexandria - TOF	9,324	3,186	15,676	2,814	25,000	6,000	25,000	6,000	-	-
2. Alexandria - Bagging System Quay 81/81	6,770	1,846	1,230	2,954	8,000	4,800	8,000	4,800	-	-
3. Safaga - Grain Silo	[50,000 MT] 24,127	12,824	47,002	14,814	[100,000 MT] 71,129	27,638	8,352	7,056	[100,000 MT] 62,777	20,582
4. Conveyors for Bagged Grain	572	8	31	-	603	8	603	8	-	-
5. LAB Equipment	63	3	(18)	-	45	3	45	3	-	-
SUBTOTAL	40,856	17,867	63,921	20,582	104,777	38,449	42,000	17,867	62,777	20,582
CONTINGENCY	1,144	-	5,580	2,686	6,724	2,686	-	-	6,724	2,686
TOTAL	<u>42,000</u>	<u>17,867</u>	<u>69,501</u>	<u>23,268</u>	<u>111,501</u>	<u>41,135</u>	<u>42,000</u>	<u>17,867</u>	<u>69,501</u>	<u>23,268</u>

- LE 1.00 = US \$ 1.20

4.02 Safaga:

A.I.D. currently has a commitment to fund the construction of a 50,000 MT grain silo complex at Safaga. Of the \$24 million originally allocated for this complex, only \$8.4 million remain available. Some funds have been expended for engineering services, but the primary shortage of funds is due to the reallocation of \$15.7 million to meet additional costs of the Alexandria TOF complex. (See Section 4.07, Current Status Report.) Inflation, commodity price increases, and other factors have contributed to the rise in costs for the Safaga grain silo facility. Table 4.2 following this page traces the history of these changes from June 1979.

4.02.1 Current Costs:

The cost estimate for the Safaga subproject of a 50,000 MT silo facility has risen approximately thirteen million dollars over the original cost projection. This does not, however, reflect that the subproject suffers a funding shortfall of some \$16 million because funds for Safaga were shifted to meet the increased funding requirements of the TOF subproject. The increased cost estimates also do not reflect that funds are required to meet engineering costs of approximately \$4 million, related to additional design and engineering services for all subproject activities. (Annex J).

	Original 1977 Foreign Exchange Estimate and Authorized level	1981 Foreign Exchange Cost Estimate	Added Foreign Exchange Costs
50,000 MT	\$24,127,000	\$37,300,000	+\$13,173,000
100,000 MT	\$37,208,000	\$47,500,000	+\$10,298,000
TOTAL ADDED COSTS			\$23,471,000

The above costs assume a local Egyptian company as a prime contractor will construct the silo complex. (See Table 4.2 next page.)

The additional costs reflect both inflation that has occurred over the past four years and the need to provide modern plant equipment for Safaga which will expand the basic grain storage capacity of the original facility to 100,000 MT. As

noted in Section 3.01 infra, the 50,000 MT complex could not handle the current throughput requirements of 1.2 million metric tons annually, because of prohibitive operating and maintenance costs. By adding ten million dollars, A.I.D. can maximize its current commitment by doubling the size of the complex and thereby essentially doubling the basic benefits of this investment at less than 24.3 percent of the costs.

TABLE 4.2
SAFAGA SUBPROJECT COST ESTIMATE
(THOUSANDS)

Subproject Inputs	(1) 50,000 MT Preliminary Design Report 6/79		(2) Inflation 6/79 - 7/81		(3)=(1)+(2)** 50,000 MT Adjusted Estimate 7/30/81		(4) 50,000 MT Facility Expansion & Upgrading Construction Performance 7/30/81		(5)=(3)+(4) 100,000 MT Proposed Contract 7/30/81	
	\$	LE	\$	LE	\$	LE	\$	LE	\$	LE
Equipment and Materials										
- Ship Unloaders	5,645	510	2,484	224	8,129	734	17	-	8,146	734
- Electrical	1,958	-	313	-	2,271	-	376	-	2,647	-
- Mechanical	6,262	-	3,802	-	10,064	-	2,669	-	12,733	-
- Steel and Misc. Architectual Items	4,808	-	816	-	5,624	-	2,090	-	7,714	-
- Freight Forwarding	2,495	441	499	132	2,993	573	(2,994)	262	-	835
- U.S. General Contractor Mark-up	-	-	-	-	-	-	6,881	-	6,881	-
Construction Contracts										
- General	837	8,240	167	856	1,005	9,096	22,253	4,274	23,258	13,370
- Piling	2,230	1,769	1,563	584	3,793	2,353	2,039	1,617	5,832	3,970
- Ancillary Facilites	-	2,325	-	1,130	-	3,455	-	-	-	3,455
Travel	<u>24</u>	<u>8</u>	<u>5</u>	<u>2</u>	<u>29</u>	<u>10</u>	<u>4</u>	<u>1</u>	<u>32</u>	<u>11</u>
Subtotal	24,259	13,293	9,649	2,928	33,908	16,221	33,336	6,154	67,241	22,384
Contingency (10%)	<u>2,426</u>	<u>1,329</u>	<u>965</u>	<u>293</u>	<u>3,391</u>	<u>1,622</u>	<u>3,333</u>	<u>615</u>	<u>6,724</u>	<u>2,238</u>
Subproject Cost*	26,685	14,622	10,614	3,221	37,299	17,843	36,669	6,769	73,965	24,622
									<u>3,888</u>	<u>647</u>
									<u>77,853</u>	<u>25,269</u>

* Engineering costs must be added to arrive at Total Subproject Costs, for Column (5).

** Contingency costs for engineering are not included since these costs have been largely met from existing expenditures.

** Column (3) represents an inflationary adjustment to the original contract but does not include any costs to upgrade contractor performance estimated at an additional \$15 million for a 50,000 ton complex.

4.02.2 Cost Comparability of a 100,000 MT Facility:

The current costs for Safaga are comparable with the costs of the 100,000 MT grain silo complexes now under construction at both Alexandria and Shoubrah which are funded under A.I.D. Project 263-K-028. The 1975 cost analysis study by Kansas State University for the 028 Project estimated that approximately \$35.6 million of equipment would be required for these two grain silos. When an inflation factor of approximately 15% is applied over five years, the 1980 cost of this equipment is \$73.24 million for both silos, or \$36.62 million for one (1) 100,000 MT silo facility. The projected cost of similar equipment for Safaga is \$35.82 million. It should be noted that the Alexandria complex includes gantry equipment not required for Safaga but both Shoubrah and Safaga have a headhouse. Safaga, nevertheless, has equipment required in the other silos. Consequently, the Safaga equipment is, on balance, comparable in both type and price with the earlier A.I.D. funded grain silo projects. Non-equipment costs for the two earlier silo complexes are also comparable if an Egyptian prime contractor is used for Safaga.

4.03 Justification for a U.S./Egyptian Joint Venture Contractor:

The GASC has noted that a U.S. prime contractor for the Project is not acceptable but is willing to use an Egyptian prime contractor or a U.S./Egyptian joint venture contractor to construct the Safaga facility. The first of the two options, reflects the desire to afford construction opportunities to local firms. However, GASC realizes that if construction were held to only local contractors, there would be a substantial chance of occurring project delays; therefore, they concur with some involvement of U.S. contractors to improve construction performance to help the local firm improve by learning from the experience of working with U.S. companies. Another major advantage of a joint-venture is that it allows equipment procurement to be made by the U.S. partner rather than being owner procured. There is the possibility of utilizing the services of the consulting engineering company to undertake procurement; however, experience on Project 028 clearly shows that the best method is construction contractor responsibility. GASC also has procedural difficulty in delegating sufficient authority to a consulting firm to carry out these responsibilities. Therefore, a U.S./Egyptian joint

venture undertaking with major control vested in the U.S. partner would assure quality control, timely completion and ease of major equipment procurement.

AID regulations, while allowing public sector owned companies to participate as subcontractors, restricts their use as prime contractors. Egypt is a country with extensive development of public sector companies and, although a privately owned local construction company may be selected as the Egyptian joint venture partner, the vast majority of Egyptian construction firms have public ownership. Consequently, a local firm that is partially or wholly owned by the G.O.E. should be eligible for participation as a joint venture partner for the Project. To do otherwise will exclude a performance capability which the Project requires, and will also reduce the number of firms, U.S. and local, able to participate by limiting the number of potential venture partners. USAID believes there is no inherent advantage in excluding public sector companies in Egypt as they tend to function in the market place as private companies. Additionally, all firms, public or private, that are to participate in the project are to be prequalified, and USAID will take the necessary steps to assure that all joint ventures bidding on the Project will be on an equal footing.

It should be noted that all Egyptian pound costs associated with the contract performance of the Egyptian joint venture partner will be borne by the G.O.E. Nevertheless, because the broad restrictions contained in A.I.D. regulations, [Handbook 1B, Chapter 5(C), 1b (2)(c)], prohibit any participation of joint ventures composed of firms partially or wholly owned by the host government, a specific waiver is required to permit such joint ventures. At present, there is no waiver provision set forth in this particular section of the Handbook. However, the PPAP has under consideration a revision to this section which will permit waivers to be made where merited by the circumstances. Accordingly, we feel that with appropriate clearance within A.I.D., such a determination would be proper.

The recommendation to use a U.S./Egyptian joint venture contractor is based primarily on A.I.D. and G.O.E.'s experience in implementing the grain silo complexes at Shoubrah and Alexandria under Project No. 263-K-028. The civil works for the two grain silos are being managed and constructed

solely by Egyptian firms. The original TDD for the 028 Project was December 30, 1979; it is now two (2) years behind schedule and a request has been made to extend the Project for yet one (1) more year. It is also an estimated \$8 million over budget although no additional funds have yet been requested. Procurement under the 028 project has been complex, involving administrative delays and difficulties in approving contracts and opening Letters of Credit. This complexity goes beyond project design and relates to the unfamiliarity of the Egyptian Contractors with A.I.D. procurement rules and U.S. contracting procedures. The burdens that have been placed on USAID and the G.O.E. to rectify these problems have been disproportionately large and have forced USAID, at least, to extend staff time to address problems that should have been resolved by the contractor. Construction has been slow because of insufficient project management and supervision, and has been hampered by inattention to quality control. More importantly, both silo complexes have encountered delays even though they are adjacent to major commercial centers where labor, material and logistical support are easily obtained and from where construction supervision should be easily applied. The remote site at Safaga presents procurement and management problems which, based on the above, are unlikely to be surmounted by Egyptian contractors without an American joint venture partner with primary contractual authority and responsibilities.

A joint venture contractor in lieu of an Egyptian prime contractor would provide a number of advantages, such as: (a) improved construction management; (b) skilled and constant contractor supervision; (c) coordination of procurement and construction activities; and, (d) better assurance of timely project completion.

Benefits of some \$24 million per annum can be realized, as noted in para 5.04 supra, by using a joint venture contractor and thereby completing the Project on or ahead of schedule. These benefits occur from reductions in the costs of demurrage, grain losses, and transportation. An estimated net loss of \$24 to \$48 million could occur from continuing demurrage and transportation costs and from grain losses if there are construction and procurement delays similar to what has occurred with the Shoubrah and Alexandria grain silo complexes.

4.04 Basis of Additional Costs:

a. \$24 million in the additional costs, or 30% of the total costs for a 100,000 MT silo (\$77.8 million), can be attributed to the introduction of contractor responsibility and improving construction performance to a minimum international level of competence (more skilled technicians and better equipment); and some \$21 million, or 27%, of the cost is attributable to inflation.

b. Another important factor increasing the level of grant funds required to complete the grain silo complex is the need to replenish funds previously allocated for the Safaga subproject but transferred to meet the increased costs of the TOF facility at Alexandria. Approximately sixteen million dollars is needed to replenish the original allocation. The balance of the request is to cover A/E costs and provide some contingency.

4.05 Summary:

The total foreign exchange cost of the 100,000 MT silo complex using a joint venture, including engineering costs, is estimated to be U.S. \$78,400,000 in foreign exchange. Of this amount, Seventy Million dollars (\$70,000,000) will be provided in Grant Funds under this amendment and Eight Million Four Hundred Thousand Dollars (\$8,400,000) will be provided from existing funds in the original Loan. The G.O.E. will provide a total cash contribution for Safaga of approximately \$30,000,000 equivalent for local costs, and will also make in-kind contributions of port land, quay, rail and other capital.

4.06 STATUS REPORT: GRAIN ; TALLOW, OILS AND FATS STORAGE AND DISTRIBUTION PROJECT:

a. Background:

The Project, as designed, included five subprojects: (1) TOF-Tallows, Oils and Fats; (2) Quay 81/82 Grain Bagging System; (3) Conveyors for bagged grain; (4) Laboratory equipment; and, (5) Safaga grain silos. The project was presented in Project Paper (AID-DLC/P-2257), and the loan agreement (263-K-041) was signed on September 28, 1977. A contract between the implementing agency (GASC), and the design contractor (BVI), was signed on June 17, 1978. Notice to

proceed was given on July 17, 1978. Design of the five subprojects was started immediately but implementation has been subject to a number of delays.

The procurement process used by GASC and USAID has been a major cause of delay. Experience also indicates that, on large complex projects, Egyptian Construction Contractors have difficulty in organizing themselves to permit multiple construction activities to be undertaken simultaneously; consequently, delays occur as construction proceeds on an item by item basis. The delays have significantly escalated the total cost of all subprojects with the result that there are no longer adequate funds to undertake the 50,000 MT storage facility within the originally planned funding proposals.

To offset the disadvantages of previous approaches in project implementation, the TOF facility has been awarded to an American Turnkey Contractor.

b. Current Status:

1. Laboratory Equipment. The equipment was delivered September 26, 1979. Installation and calibration were completed on September 7, 1981. The laboratory is now fully operational by GASC.

2. Portable Bagged Grain Conveyors. A contract for 67 conveyors was awarded in March 1981. The equipment was shipped in December, 1981 and is to arrive in February 1982. On arrival, the equipment will be assembled and then transhipped by GASC to various Ports for use in grain offloading.

3. Alexandria - Bagging System Quay 81/82. The first Equipment Contract was awarded June 1979. The Construction Contract was awarded in December 1979. As of June 1981, all major procurement has been awarded; installation and erection of equipment is under way. Operational testing on Quay 82 was completed in December 1981. Quay 81 is expected to be completed by February, 1982. Full operation of Quay 81/82 is expected by late February 1982.

4. Alexandria - Tallow, Oil and Fats Storage Facility. After design approval, Egyptian tallow users in conjunction with the U.S. National Renderers Association

objected to the tallow facility design. Although the BVI design was not disproven, it was unique. As a consequence, BVI was instructed to redesign the tallow facility in a more conventional arrangement. It was decided to construct this facility as an American Turnkey Contract and a contract award was made in May 1981. The site has been turned over to GASC. The Contractor mobilized in December 1981, and started construction. (Original Project Completion Date August 1980; Current Project Completion Date December 1983.)

5. Safaga - 50,000 MT Grain Silo. The GASC has initiated the design phase of project implementation, but this project has suffered two major delays. An eight month delay was experienced as the result of a local newspaper article which questioned the design concept. After resolving this issue, the operating agency, the General Company for Silos (GCS), approved the final design in July 1980. Unfortunately, the GSC approval was coupled with a request to change the basic design parameters. The issue of whether to change the design parameters was not resolved until May 1981, and the final cost estimates were not resolved until late October, 1981. (Original Project Completion Date May 1981; Current Project Completion Date June 1985.)

4.07 Expenditure Schedule:

A detailed, revised schedule of expenditures for the Grain, Tallow, Oil and Fats Project is provided in Table 4, Annex K.

V. ECONOMIC ANALYSIS

5.01 Introduction:

Egypt is currently importing approximately 1.2 to 1.5 million metric tons of wheat through the Port of Safaga to meet wheat demand in Upper Egypt. At present, no silo storage facilities exist at the port.

The absence of these facilities raises substantially the economic costs of wheat deliveries to Upper Egypt. In brief, the economic savings that would result from the provision of silo and associated facilities are in three major areas - reduction in wastage, reduction in demurrage and contract port days, and reduction in unit transport costs:

Wastage: Wastage and spoilage due to the absence of modern storage and offloading facilities are currently estimated at 5% of deliveries.

Demurrage/contract port days: Current contracts for wheat delivery at the Port include provisions for a port stay averaging 17.72 days. The length of port stay could be reduced by modern storage and offloading facilities. In addition, Egypt is currently paying demurrage charges for port stays in excess of the 17.72 contract days currently provided for in delivery contracts.

Transport Costs: Transport costs per ton of wheat are roughly inversely proportional to the capacity of ships in which the wheat is delivered. Modern silo/storage facilities would substantially increase the ship size capacity that Safaga could handle, thus reducing unit transport costs to Safaga.

This amendment proposes to expand the planned 50,000 MT silo facility (Project No. 263-041) at the Safaga port to a 100,000 MT facility. Excluding contingencies, total economic costs for the base 50,000 MT facility and the amendment are \$94.0 million, consisting of \$71.1 million of foreign exchange and \$22.9 million equivalent in local currency. Local currency is converted at an estimated shadow

exchange rate of L.E. 1.00 = \$1.00. Other economic benefits are thought to be substantial as well. They include freeing of port facilities for other trade activities, insuring adequate wheat supply through purchase of wheat at lower world prices and reducing grain losses at flour mills.

A cost-benefit analysis for the construction of 100,000 MT facility gives an internal rate of return of approximately 18.2%. A marginal cost-benefit analysis of this amendment gives an internal rate of return of more than 26%.

5.02 The Port of Safaga is ideally located to receive wheat supply from Australia for Upper Egypt. Transportation costs from Safaga to flour mills in Upper Egypt are far less than from Alexandria. During 1979 and 1980, Safaga accommodated a throughput of about 1.2 million MT of wheat, but the operation has been a costly one due to lack of a facility to handle the large quantity of wheat throughput. According to the General Company of Silos, the normal offload capacity at the Port of Safaga is 2,500 MT per day. At this rate, it would take 480 days per year to offload 1.2 million MT, obviously an impossible task. Instead of operating at its normal capacity, the Port of Safaga has been unloading at more than 3,500 MT per day using various inefficient and expensive means, such as offloading to barges and at times actually on the ground. The Black and Veatch Master plan estimated that about 5% of grain offloaded at Safaga has been lost due to inadequate grain handling. In addition, because of delay in unloading, the GASC paid approximately \$875,000 as demurrage charges during the three months period between December 12, 1980 and March 12, 1981.

Construction of the 100,000 MT silo facility is expected to meet the wheat import demand in Upper Egypt without incurring unnecessary high costs at the Port of Safaga.

5.03 Economic Benefits

Major economic benefits of constructing 100,000 MT storage facility at the Safaga Port come from reduction in wheat losses, demurrage and idle time charges, and ocean transportation costs.

1. Reduction in Wheat Loss

Because of port congestion and inadequate facilities, it is estimated by the Black and Veatch consultant that about 5% of 1.2 million MT throughput has been lost due to wastage at the port. With the construction of 100,000 MT facility with a series of self-propelled pneumatic unloading gantries and modern bagging facilities, the loss would be reduced to 2% of the throughput. ^{1/} Given the current throughput of 1.2 million MT per annum and the average C.I.F. value of \$273.71 ^{2/} per ton of wheat, the cost saving amounts to \$9.85 million annually. ^{3/}

2. Reduction in Demurrage and Idle Time Charges

Shipping contracts specify the number of days required to unload the content. If the unloading takes longer than the contracted time, GASC must pay demurrage charges of about \$13,000 per day. On the other hand if the unloading completes within the allowed time period, GASC receives rebates determined by the remaining contracted time.

During the period between December 12, 1980 and March 12, 1981, GASC paid demurrage charges to 13 different contracts for the Safaga Port of about \$875,000 in an effort to offload 381,803 MT of wheat. This penalty payment has been a direct result of deficient port facilities to handle the required 1.2 million MT throughput. At that rate, total demurrage charges to offload 1.2 million MT would amount to \$2.75 million a year. The 100,000 MT facility with the 8,000 MT average offloading capacity (12,000 MT peak capacity) per day should eliminate demurrage charges. In fact, the Safaga

^{1/} Data from GASC are scarce to support this claim. Conversations with GASC officials and Black and Veatch consultants indicate the actual loss reduction rate may be anywhere between 2% to 4%. In this analysis we assume it to be either 2% or 3% and present IRR in both cases.

^{2/} This GASC price seems somewhat higher than the Australian wheat price quoted in IFS. It might be that Egypt pays higher prices under a supplier credit arrangement.

^{3/} If the loss reduction is estimated conservatively at 2%, the cost saving will be \$6.57 million.

Port will be able to offload sooner than the allotted time, thus reducing ship's idle time and receiving rebates. During the above mentioned three months period, the average idle days per ship was reported as 17.72 days. With the 8000 MT unloading capacity per day, the Safaga port should be able to reduce the idle days by 47%. (During the above three months, the Safaga port unloaded on the average at 4242 MT per day. With the 8000 MT capacity it would take only 53% of the time.) The opportunity cost of reducing the idle time by 8.33 days for each of 13 different vessels at \$13,000 per day is worth \$1.41 million to the ship owners. For the year it would amount to \$5.64 million. New shipping contracts should cost GASC \$5.64 million less due to the reduced idle time. Total estimated benefits from reduced payments in penalty and from rebates will add to \$8.39 million per year.

3. Reduction in Transportation Costs

During the first three months of 1981, the Port of Safaga, as mentioned earlier, managed to offload a throughput of 381,803 MT that was shipped in 17 different vessels. The average size of the shipments was 22,500 MT. GASC paid an average freight cost from Australia of \$48 per MT. At this rate, transportation costs alone will reach \$57.5 million in 1981 for the 1.2 million MT of wheat expected to pass through the port. Transportation costs could be cut substantially by using larger bulk shipments than the average size of 22,500 MT. Due to larger offloading and storage capabilities, GASC could purchase bulk wheat at the average size of 50,000 MT shipments, which could be offloaded within a week.

Assuming conservatively that transportation costs could be reduced by 10% of the current cost by doubling the average size of shipments, total saving would amount to \$5.76 million for 1.2 million MT.

4. In addition, there are secondary economic benefits that are thought to be substantial in magnitude but unquantifiable at this time. They are:

a. Freeing of Port Facilities for Other Uses --

The current inefficient method of offloading 1.2 million MT ties up the Safaga Port all year long. With the 100,000 MT silo facility, the port will be capable of offloading, on an

average, 8,000 MT per day. With a careful planning of delivery schedules to the port, wheat demand in Upper Egypt can be met in 150 days of port operation a year, leaving 215 days for other port activities. Economic benefits that could be derived from use of the port for seven months out of a year could be very substantial. Obviously future economic gain will depend on how fast the Egyptian economy, particularly, the economy of the Upper Egypt area, develops. In the near future, however, wheat imports beyond 1.2 million MT a year can be met without further expansion of the port facility.

b. Insuring adequate Wheat Supply -- Although the primary purpose of constructing the 100,000 MT storage capacity is to facilitate the flow of wheat to flour mills in Upper Egypt in a timely manner rather than to store wheat for emergency purposes, the storage capacity, nevertheless, can be used for insuring adequate wheat supply by delaying purchase of wheat when the world price is high and by purchasing more when the price is low. Again, economic benefits from such activity would be difficult to measure, but could be substantial depending on the efficiency of the GASC operation.

c. Reduction of Wheat Loss at Mills -- With no storage facilities at the port, offloading operation requires trucking of the bagged wheat directly to the mills from the vessel regardless of availability of storage facilities at the mills. Often bags are piled up outside the mills for days before they are processed. There are no estimates of wheat losses at the mills, but it is believed to be substantial. With the storage buffer capability of 100,000 MT at the port, trucking can be spaced out in time so as to minimize wheat loss at the mills. This will require a forward plan for the delivery schedule, but with some experience, it is expected that scheduling problems can be overcome. Economic gain would be again difficult to measure and no statistics are available about handling of wheat at the mills.

5.04 Cost-Benefit Analysis

1. For 100,000 MT Facility:

Total economic costs of \$94.0 million are expected to be spent over five years of which \$2.04 million in the first year, \$26.18 million in the second and \$34.87 million in the third, \$25.40 million in the fourth, and \$5.64 million in the

fifth. It is anticipated that total benefits will begin to accrue in the sixth year and extend at this level over the next 40 years during the life of the equipment. If the wheat loss reduction is 3%, total measurable economic benefits -- benefits from reductions in wheat losses, demurrage and idle time charges, and transportation costs -- would be \$24.00 million annually over the 40-year equipment life. Repair and maintenance costs of the equipment are estimated at \$0.08 million a year. Net yearly benefits accruing to Egypt, therefore, would be \$23.92 million with the wheat loss estimated at 3% and \$20.64 million with 2% wheat loss.^{1/} The Internal Rate of Return is found to be 18.2% for the 3% wheat loss and 16.3% for the case of 2% loss.

2. For 50,000 MT Facility:

At normal throughput levels, the total economic savings that would result from the provision of modern storage/offloading facilities are approximately proportional to the normal throughput capacity of these facilities. Thus, a 100,000 metric ton facility - providing a normal throughput capacity of 1.2 to 1.5 million metric tons annually - would provide savings equal to about double a 50,000 metric ton facility. While the savings are proportional to capacity operated at normal throughput rates, the costs of doubling the silo facilities, as indicated in the project amendment, are substantially less than double the costs for the 50,000 ton facility. In particular, project economic costs for a 100,000 ton facility are estimated at \$94.0 million while project costs for a 50,000 ton facility are estimated at \$66.3 million.

As suggested by these figures, there are substantial economies of scale in doubling port facilities. Capacity can be doubled for a cost increase of \$27.7 million or for about 142% of the cost of a 50,000 ton facility.

^{1/} In the Internal Rate of Return calculation, we assumed that costs of operation before and after the construction of the grain silo remain unchanged. This assumption was used primarily due to lack of reliable data on costs of operations. However, the Black and Veatch consultant estimated that operations costs would decline to \$1.6 million after the completion of the silo facility from the current estimated cost of \$4.22 million. To the extent this is true, the Internal Rate of Return should be substantially higher.

As discussed above, net anticipated savings per year for a 100,000 ton facility operated at normal throughput are estimated at \$23.9 million annually. At normal throughput rates, about 1/2 of these benefits or \$12.0 million would accrue annually as a result of the project amendment costs of \$27.7 million. However, the point to emphasize is that these savings are calculated on the basis of normal throughput operating rates. In fact, a 50,000 ton facility can be operated at rates above normal throughput with some reduction in savings.

We do not have sufficient data to measure the reduction in savings that would result from higher than normal throughput operating rates for a 50,000 ton facility. As a result, we have performed some sensitivity analyses designed to "bracket" the expected economic rate of return associated with the project amendment costs of doubling the facility. As an upper bound, we have assumed that 1/2 of total savings of \$23.9 million annually or \$12.0 million will result from doubling the capacity. As a lower bound, we have assumed that only 60% of these savings or \$7.2 million accrue as a result of the doubling of the silo facility.

At \$12.0 million in savings per year, the economic rate of return for the capacity addition provided by the project amendment is estimated at about 43%. At \$7.2 million in savings per year, the economic rate of return is estimated at 26%.

On the basis of the foregoing analysis, we conclude that this project satisfies the requirement for economic rate of return set forth in Section 611(a), FAA.

VI. TECHNICAL ANALYSIS

6.01 The technical aspects of the Project were considered during the original project selection process. The proposed subproject is considered technically feasible within the meaning of Section 611(a), FAA.

6.02 Project Description:

The project consists of two mobile ship unloading gantrys located on the quay now being constructed. These gantrys will be equipped with pneumatic unloaders which will discharge the grain onto enclosed belt conveyors which will convey the grain to the scale house and thence to the head house. From the head house the grain can be distributed by bucket elevators, drag conveyors and surge bins to the truck loading system, the bagging system, or the silos. Maximum flexibility for using systems is provided.

6.03 Project Location:

The project site is located at Safaga Port on the Red Sea about 600 km southeast of Cairo and 200 km east of the Nile River near Qena. It imposes no special construction problems. It is clear and generally level. The silos will be located in a fenced area north of the port limits. The belt conveyors, scale house and ship unloaders will be located within the port compound, and will be separated from the rest of the port area by a fence.

6.04 Site Access and Utilities:

A good, surfaced road connects Safaga to Qena 200 km west which is on the main north south highway and on the Nile River for barge access. There is at present no railroad serving Safaga. However, the government is now constructing a rail connection between Safaga and Qena and space at the site has been allowed for future use as a railroad right of way.

The port facility now in use, and the expansion under construction will be available for receiving construction equipment and materials.

The government is now constructing a water pipeline from Qena to Safaga. However, until the pipeline is completed, water will have to be trucked or barged to the site for construction. The project includes 200,000 gallons of storage and an associated distribution and pumping system.

Electricity for construction will be supplied by a new 10 megawatt combustion turbine facility presently in use.

6.05 Soil Condition:

A satisfactory geotechnical investigation has been performed which concludes that because of the loose sand stratum generally encountered on the site, pile foundations would be required for the heavy structures, such as the silos, headhouse, bagging station, administration building and conveyor towers. Ground water is not anticipated to be a problem.

6.06 Seismic Situation:

The site is in earthquake zone 2 and thus adequate seismic precautions were included in the design. This is the main reason for pile supports under the interior crane rail for the ship unloader.

6.07 Design:

a. General:

The design is standard and does not incorporate any unusual features for facilities of this type. It is practical, of adequate capacity, incorporates modern safety features and allows for good operational flexibility.

b. Structural:

As stated in the section on soil conditions, the heavy structures will be supported by piling. The conveyor towers will be pile supported with adequate reinforcement to transmit tensile loads caused by uplift. Because of the proximity of earthquake epicenters the fill behind the new quay wall is given special consideration, and the interior crane rail is placed on a continuous pile supported foundation beam.

The one and two story ancillary light weight structures will be on spread footings.

c. Capacity and General Design of Facilities:

1. The expanded facility will be served by three (3) modern pneumatic ship unloaders. Each unloader is fitted with two (2) 150 MT pipes with an average unloading capacity of 600 MT/hour; the maximum capacity of these unloaders is 900 MT/hr which can be maintained for twenty hours a day. The unloaders are designed to serve carriers up to 75,000 MT (DML) and although the unloading times vary between 12 to 24 hours, depending on ship size and configuration, demurrage costs should be reduced considerably. The conveyor system has the capacity to provide up to 1200 MT/hour in response to handle peak unloading requirements.

2. The 100,000 MT storage complex will consist of a total of sixty-four (64) concrete bins each of which will be of 10 meter diameter. Thirty-two (32) bins will be placed on opposite sides of a central headhouse, and will be individually constructed and spaced, and not grouped, to maximize venting. This arrangement will minimize the potential for any spread of an explosion. The head house is of open design with maximum use of sloping conveyors and minimum use of bucket elevators. The head house design will further minimize conditions known to be explosion sensitive.

3. Two (2) bulk truck loading spouts and one (1) bulk rail loading spout will be constructed. Twenty bagging (20) stations will also be erected. The system will have the capability of loading directly from ship to truck/rail/bagging stations and of loading directly into storage.

4. The design incorporates all necessary backup components to reasonably assure continuous and orderly operation.

5. Design criteria used is as follows:

a. Structural line loads Grain 60 LB/BU,
Platforms and floor 100 LB/Sqft.

b. Impact loads: Elevators 100%, Machinery 20-50%, Wind loads and seismic loads as defined in ANSI A58.1 and U.B.C.

c. Mechanical Equipment in accordance with AGMA, SAE, ASME and CEMA with special consideration for dust and local ambient conditions. Also to handle soybean meal, edible rice, pelleted feeds and minerals.

d. Electrical in accordance with Class II, Group G, Div. I hazardous location per article 500 NFPA-70 for bin installation and outdoor weather proof or indoor industrial for other locations.

6.08 Operation and Maintenance:

The project includes adequate provisions for ease of operation and maintenance, as well as a training program for maintenance operations and repair of the project equipment. Personnel to operate and maintain the facility will be recruited locally.

6.09 Implementation Plan:

Present plans call for ordering the ship unloaders and contracting for the pile driving as separate procurements, followed by a general contract for the remaining portions of the work. This procedure will advance the project approximately six months and is considered as the most expeditious approach.

The major elements of the general contract will be: (a) equipment procurement and assembly; and, (b) slip forming. Both of these elements will require a substantial experience background in the specialized areas.

Construction material will be purchased locally by the G.O.E., but there may be a requirement to purchase some steel, cement and other items from U.S. sources if local material does not conform to construction specifications. This would add transportation costs to the Project, but because these materials are not yet known to be required and these added expenses to be paid with U.S. dollars would have to be accommodated by the contingency account.

Project implementation plans and schedules have been developed on a modified CPM format and are considered reasonable and workable.

6.10 Project Cost Estimate:

The current cost estimate is considered to be reasonable. Some difficulty is expected in attracting U.S. bidders on this project; however, the A/E and the Mission have both discussed this project with a number of U.S. contractors and believe that adequate competition will be obtained. U.S. contractors with experience in constructing similar facilities are relatively unfamiliar with conditions in the Middle East. The remoteness, isolation and general harshness of living conditions may create some difficulties in recruitment of qualified personnel. These factors will also complicate an already difficult logistic situation. Some U.S. General Middle East suppliers and sub-contractors have had recent unfortunate experiences on similar projects which will influence bidders in preparing price quotations for this project. All of these factors will tend to reduce interest in the project and to increase the costs of construction. It is our opinion that the cost estimate is relatively accurate if five (5) or more bids are received.

VII. SOCIAL ANALYSIS

7.01 General Benefits:

Although the Economic Analysis Section (Section IV, above) demonstrates that the proposed project will have a favorable impact on the Egyptian economy, it is difficult to assess with specificity how those benefits will be distributed among different sections of the population. The G.O.E. practice of administered prices, particularly of food items, makes it impossible to assess how the savings, which result from more efficient and enlarged handling of imported grain, will impact on prices charged by flour mills, bakeries and other processors, and merchants in the distribution chain. Price control also makes it impossible to determine how the savings are ultimately passed to consumers. The possibility of future changes in pricing policies will also affect how savings may be reflected in the market place. Nevertheless, savings accrue in the first instance to the governmental entities involved in the Project. These savings should, therefore, result in lower operating costs for those entities to promote budgetary savings. To the extent that food prices continue to be subsidized, these savings are likely to result in a reduction of the G.O.E. subsidies required to maintain low consumer prices. Only if subsidies were to be completely removed would there be an opportunity for a meaningful study by AID of ways to pass the savings on the consumers.

7.02 Safaga:

Safaga is relatively underdeveloped because the only significant activity in the area involves port operations. The majority of the local population comes from neighboring communities to work as laborers in the port. Construction of the grain silo complex should, therefore, have minimal disruptive impact on their social activities because no land condemnation is required and residents will not be required to relocate. Likewise, the relatively small increase in workers required for the construction phase would not adversely affect local life styles since these activities are designed to be self-supporting. Although mechanization will reduce the overall employment levels at the labor intensive bagging facilities, construction of the facilities at Safaga will

create a substantial number of jobs for skilled, semi-skilled and unskilled workers.

Because the Safaga port area is only now being developed, it is difficult to fully assess how the operation of the facilities will provide new job opportunities after the construction phase is completed. However, numerous service industries will develop for the Port. Such opportunities will be related to operation and maintenance of the bulk grain tracks, rail yard and quay. Support activities of these workers should also arise. As the area develops, other job opportunities will arise. Some of the temporary residents may, of course, return to their former homes or move to new job opportunities such as the Sinai development.

7.03 Role of Women.

Given The nature of the project, women are unlikely to play an important role in its execution. However, there may be an opportunity for women to participate in implementing the Project and in downstream activities arising after the Project is completed.

VIII. ENVIRONMENTAL CONSIDERATIONS

8.01 No significant adverse effects on the environment will occur as a result of the expanded grain silo complex at Safaga. Consequently, the original environmental analysis in the 1977 Project Paper which recommended a negative determination is not affected by this sub-project amendment. Nevertheless, an updated Environmental Analysis has been prepared+. (Annex L).

IX. IMPLEMENTING AGENCIES

9.01 A separate Safaga construction management unit under the overall control of GASC management is being established by the G.O.E. A.I.D. will require this unit to be appointed and operational before expending subproject funds, preferably before March, 1982. The degree of independent authority it will have over Project implementation is yet to be determined but ultimate Project authority will rest with GASC. The authorities and functional responsibilities of GASC are described in the original Project Paper.

X. IMPLEMENTATION PLAN

10.01 Administrative Arrangements:

The Grantee will be the Ministry of Trade and Supply (MTS) for the Arab Republic of Egypt. The General Authority for Supply and Commodities (GASC) and the General Company for Silos (GCS) of the MTS will implement the subproject. A full time Project Manager from GASC has been appointed to oversee the Safaga Silo Project.

10.02 Engineering Consulting:

Since June 1978 GASC has had a contract with the consulting firm of Black and Veatch International (BVI). The BVI scope of work includes responsibility for the design of the 50,000 MT facility and for supervision of construction. The proposed expansion requires minimal additional engineering input and construction supervision since these personnel are already involved in implementation activities. GASC suggests that the most cost effective way to complete the total Safaga design and supervision is with BVI. USAID agrees.

10.03 Construction Contracting and Procurement:

To assure a more timely completion of the project, the United States contractor will have primary responsibility for the Safaga subproject. Other Egyptian firms may participate as subcontractors. The joint venture arrangements will be reviewed and approved by A.I.D. to assure that the U.S. partner retains sufficient control in the joint venture for ultimate power to assert quality performance and to finalize procurements.

In a very real sense, the introduction of contractor or whole-of-the-works responsibility adds less to overall costs than it does aggregate total economic costs in the construction contract. With the equipment procurement separated, the quasi force-account relationship between the Ministry of Supply and Egyptian contractors, previous estimates did not reflect the total financial costs or the real economic costs associated with procurement and delay. Contractor responsibility puts a value on time. Our previous contractual forms did not reflect such value and were performance undervalued.

Because Safaga is a remote site, logistical planning must have a very high priority. A separate host country contract for piling is anticipated and should be underway before a general contract is awarded. A separate host country contract for the specially designed pneumatic unloading gantries requiring long lead time also will be used. All other contracting, construction management and procurement would be the responsibility of the U.S. contractor.

10.04 Implementation Schedule:

A. ORIGINAL LOAN:

Loan Authorization	September 27, 1977
Loan Negotiated and Signed	September 28, 1977
Original PACD	September 30, 1981
Current PACD	September 30, 1982

B. PROPOSED GRANT:

NEAC Approval	February 1982
CN Expiration	March 1982
Grant Authorization	March 1982
Grant Negotiated and Signed	March 1982
Construction Contract executed	December 1982
PACD	December 1985

10.05 Project:

Final design for the 50,000 MT complex is 90% complete, and contract documentation for the initial 50,000 MT facility is complete. Revisions to design and construction documentation for the additional 50,000 MT storage are minor. A construction contract with a US Contractor could be awarded by November or December 1982. Construction, equipment installation and turn over of an operational facility will be completed in three years.

10.06 A.I.D. Implementation Responsibilities:

In addition to current Project implementation activities, USAID will undertake the following responsibilities for the Safaga Grain Storage Silos Subproject:

1. review and approve all final design and construction plans for Safaga;
2. review and approve all primary contracts for Safaga;
3. undertake: (a) periodic subproject implementation meetings with G.O.E. agencies and Project contractors; and (b) periodic site inspections; and,
4. review progress reports for Safaga.

XI. EVALUATION

11.01 The evaluation will determine: (a) whether construction and operation of the silo complex were completed as scheduled, in accordance with the approved design and technical standards; (b) whether the additional storage capacity met the project purpose; and, (c) whether the proposed construction contract and special GASC project management unit materially contributed to satisfactory implementation of the subproject.

XII. DRAFT AUTHORIZATION

12.01 Amendment.

A draft project authorization is provided in Annex D. It will amend the existing PAF to provide grant funds and establish a new life of project funding level. Because the terms and conditions of the original Project Loan Agreement have been substantially implemented for all the subprojects and because this amendment is for a large, discrete subproject activity, a separate Grant Project Agreement will be executed rather than amending the Loan Agreement into a Loan and Grant Agreement. The original Loan PACD will be extended to coincide with the 1985 PACD for this grant.

12.02 Conditions Precedent.

Standard CP's will be incorporated into the Grant Project Agreement. The four (4) CPs in the original Loan for the 50,000 MT facility have been satisfied. These meet the needs of the expanded 100,000 MT facility. In this regard, the site has been transferred to GASC and is large enough for the expansion. Power is available; water and waste water needs will be designed into the system. Access exists in the form of a two-lane paved road to Quena and a railroad is under construction and will be available for use in 1984.

For the Safaga subproject Grant, two (2) CP's will be proposed to insure that, except for construction of pilings and

logistical procurement such as pneumatic loading gantries, no funds are prematurely expended for construction activities. They are as follows:

(a) GASC will be required to enter into a construction contract which is satisfactory to A.I.D. and with a construction firm that is satisfactory to A.I.D.

(b) GASC will be required to establish a separate management unit to oversee the Safaga subproject activities.

12.03 Decennial Liability:

To protect the U.S. construction contractor from extended liability, a clause will be added to the Standard Grant Agreement to exempt the Safaga subproject from the G.O.E. decennial liability statute.

12.04 Congressional Notification:

The 1981 CP requested only \$21 million in grant funds; therefore prior to the obligation of funds, a Congressional Notification (CN) is required. A draft CN is attached. (Annex E).