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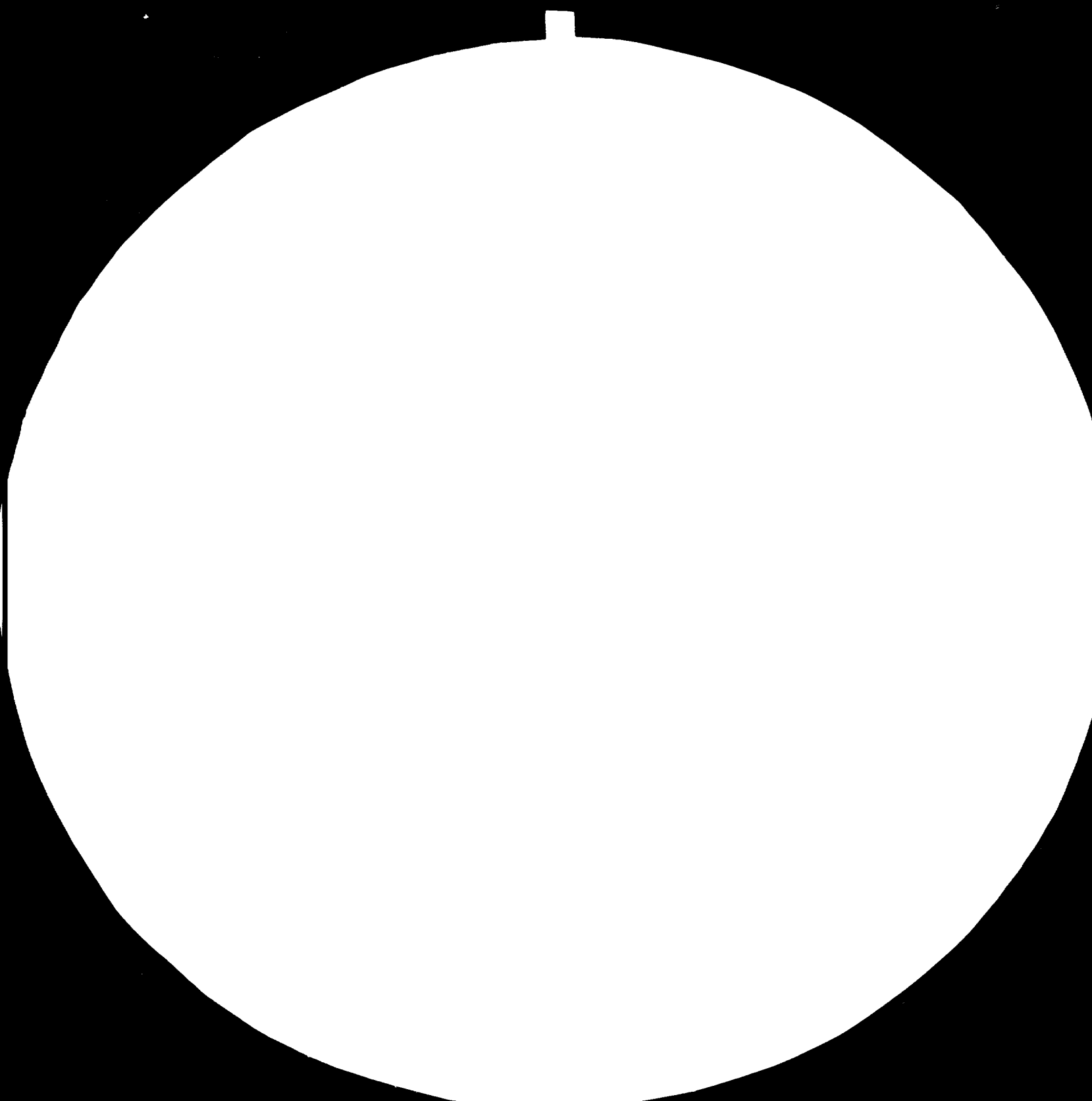

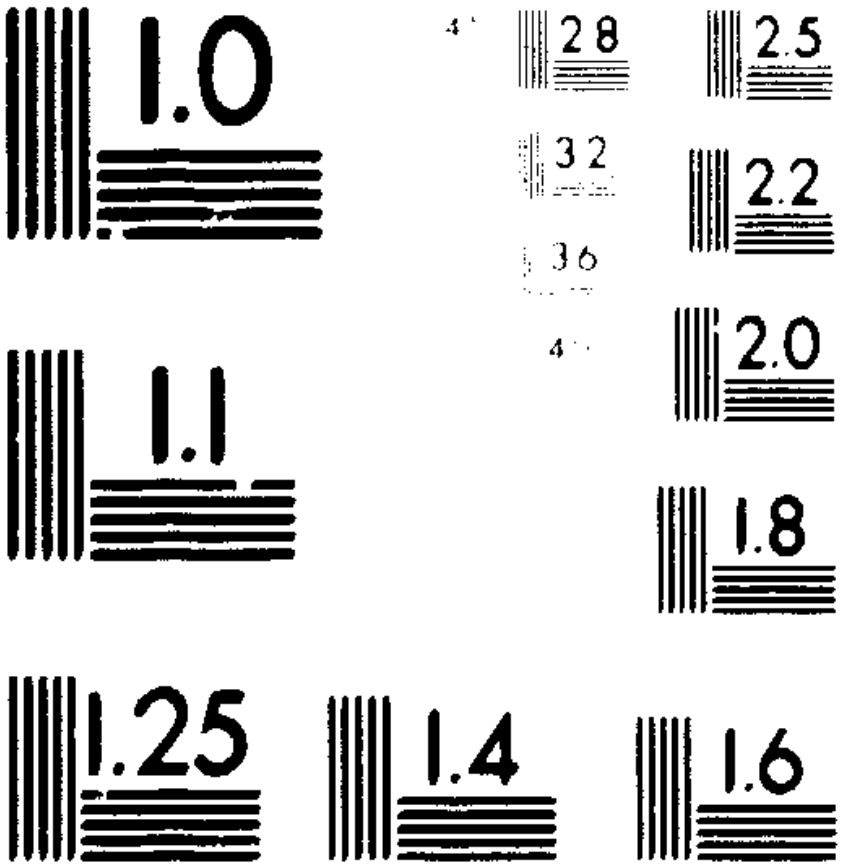

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DP/ID/SER.B/422
24 October 1983
English

United Arab Emirates.

ASSISTANCE TO THE EMIRATES CERAMIC FACTORY, FUJAIRAH

DP/UAE/83/003

UNITED ARAB EMIRATES

Terminal report *

Prepared for the Government of the United Arab Emirates
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of Ian Knizek, UNIDO Consultant

United Nations Industrial Development Organization

Vienna

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Introduction

The Emirate of Fujairah has no oil and gas deposits for which reason its Government is turning to Industrial Development as a source of revenue. Its Department of Industry deals among others with all industrial matters including pre-feasibility and feasibility studies, tendering and evaluation of industrial projects. To assist the Department of Industry and Economy in the above tasks the Govt. of Fujairah has requested UNDP to provide a consultant for an initial period of two weeks during which activities in the field of ceramics could be identified and a project document prepared. Such a mission by a consultant was considered of special interest in view of the recent establishment of a wall-and floor tile factory in Fujairah presently in the process of being commissioned. Initially the duties of the Ceramics Consultant were to be the following.

(1) Advise the Department on matters related to on-going and future activities within his fields of competence with specific attention to refractories manufacture:

(2) Identify exactly the technical assistance requirements in this and related fields:

(3) Prepare a project document for the future technical co-operation programme in the Glass and Ceramics sector:

Originally the Ceramics Consultant was supposed to co-operate with theconsultant in glass manufacture who also have been already fielded.

On arrival in the Emirate the Ceramics Consultant found that the Glass Consultant was at the end of his mission and that even his proposals have already been drafted by him.Furthermore the overlap of his mission with that of the Ceramics Consultant did not exceed 24 hours.

Further more the Government expressed its desire for the Ceramics Consultant's concentrating his efforts on the activities of the Emirates Ceramic Factory.

The Consultant, Mr. Knizek, appointed by UNIDO arrived in Fujairah October 4, 1983 and departed October 13.

Summary of Conclusions and recomendations

1. The products of the Emirates Ceramic Factory is quite good even by International standards.

2. The margin of profit is comparatively low.

3. Sales prices are likely to be raised now that some protection has been obtained in from of duties on imports. This will improve the margin of profit.

4. Geoconsult controls the operation of the factory through appointies to key positions in the factory of people from its own organization abroad.

5. Geoconsult performance in both Project and Operational Management has been satisfactory.

6. A particularly positive achievement has been the discovery and introduction in to the process of shales through which excellent body properties and single-clay, single-fired tiles have been achieved.

7. The plant's commissioning has been considerably delayed and it is doubtful that this will be achieved before the end of 1983.

8. The major culprit in this respect is the equipment contractor who has apparently delivered faulty pressing equipment.

9. Geoconsult cannot entirely escape part of the blame either because the deficiencies of the contractor's presses is well known in the trade in Europe and could have been detected by an in-depth survey among tile manufacturers there.

10. A strict enforcement of the contractor's terms of guaranty is highly recommended.

11. The quality of the technical personnel appears to be satisfactory and they show excellent morall.

12. The absolute control of Geoconsult about all phases of the operation is somewhat disturbing.

13. The Government should have better insight and more control of the factory.

14. Due to the lack of personnel at the Department of Industry this has until now been possible only imperfectly.

15. Collaboration of UNIDO in providing general monitoring and advisory services to the Government will go a long way towards correcting the deficiency exposed in point 13 and 14.

16. A project document the aim of which is to assist the Government as per point 15 has been prepared.

17. The project document recommends a delivery of 22 expert man-months over a period of three years, which are believed to be the critical ones in the life of the factory.

18. The in-plant production of frits is recommended but experts in formulation and development will be required.

19. UNIDO should be able to provide assistance in this field within the Project envisaged.

20. At the time being the possiblities of industrial development in other fields of ceramics are questionable.

21. The manufacture of sanitary ware, which would fit well marketing-wise into the factory's present field of operation has been already undertaken by another outfit in the U.A.E.

22. The Manufacture of pottery is due to U.A.E's peculiar social conditions unattractive, it being a potentially low-profit, difficult field of activity.

23. The manufacture of refractories is, for the time being unattractive because the U.A.E. lacks clays of refractory quality which constitute the very basis of such an industry.

24. The quality and magnitud of the manesite deposits in the Emirates are unsatisfactory.

25. Furthermore, the U.A.E. seem to lack a sufficient home consumption basis at the present time, same being considered a prerequisite for its eventual development.

1.00.0 The Emirates Ceramic Factory

1.10.0 Background

Invited by the Abu Dhabi Fund for Arab Economic Development, Geoconsult of the Hague, Holland presented in November 1979 its Proposals for Feasibility study of Al-Fujairah clay products Factory (1). The Agreement for the preparation of the Feasibility study was signed between the Government of Fujairah and Geoconsult in March 10,1980. May 2, of the same year Geoconsult delivered the Preliminary Technical Report dealing mainly with the Amgah clay and its uses. (2) The final Report was submitted in July 17, 1980. (3) Among its main conclusions was that the manufac-ture of floor and wall tiles offered good possibilities because a market study showed that the annual demand in the U.A.E. for the years 1980 - 1990 could be estimated at 500,000 - 800,000 M^2 of floors tiles per year. Therefore an optimum plant capacity should be close to 500,000 M^2 requiring an estimated investment of 65,000,000 DH. and producing a profit against invested capital of 18% with a Pay-back period of 3.8 years. Since, however, full capacity would be reached within 3 years after the date of erection, the total Pay-back periods would be closer to approximately 7 years.

1.11.0 Implementation.

Early 1981, the plan for the establishment of a factory to produce 600,000 m^2 per annum of Ceramic floor and wall tiles was approved by the Government of Fujairah. (The establishment of a Rock wool Factory was approved at the same time) Funds ware appropriated by the Abu Dhabi Fund for Arab Economic Development to the tune of 29,760,000 Dh.

Geoconsult was made responsible for project management during design, engineering erection and commissioning. An agreement was signed with the German company Gebrueder Netzsch Maschinen fabrik GmbH of Selb for the supply of equipment, errection and operation starting March 31, 1981. (5) The Kiln was to be suplied by Heimsoth Keramische Oefen of Hildesheim, W. Germany.

(7) Originally the body was to be composed mainly of the Amgah Clay with minor additions of the clays from Masafi and Tawi Sarram. (3) Later, however, it was found that 70-75 of Amguah clay had to be mixed with 25-30% of imported kaolin to correct deficiencies of the body. November 1981 Geoconsult geologist surveyed and tested a series of shales (8) which proved to possess unique properties enabling the factory to work with a single-clay body and produce a strong red tile body without any other additions. This is a fine achievement.

Actual mechanical completion of the plant was achieved by the end of September 1982. Pressing was started in November 1982 and the kiln was started about the same time.

1.12.0 Management

September, 1982 the Government of Fujairah and Geoconsult signed an Agreement for the Management of the Emirates Ceramic Factory (and of the Fujairah Rockwool Factory and Fujairah Marbles and Tiles Factory, not subjects of the present report). (10) In terms of the contract Geoconsult would assume the technical and commercial management, administration and sales organization of the factory. To this effect, Geoconsult would appoint permanently in Fujairah.

One general administrator for all factories
One sales and production planner-coordinator
One sales manager for ceramics.

(Apart from sales manager for rockwool, general administrator for Marble and Tiles Factory, Sales Manager for Marble and Tiles Factory)

In virtue of these appointments Geoconsult through Dr. M.Massad and K. Massad would back operations of

- Market research
- testing certification of products
- publicity
- design
- technical research and follow-up of developments and innovations in the fields of:
- processes

- manufacturing
- equipment
- products and
- applications

For the above services the Fujairah Government agreed to pay Geoconsult :

A. Dhs. 10,000 per man - month of the personnel appointed by it: i.e. a total of 3 x 20,000 = 60,000 or Dhs 720,000 per annum (U.S.$ 197,260)

B. 10% of the net profit to be calculated and paid by the end of each calendar year.

1.13.0 Commissioning.

Five days commissioning test conducted in March in the presence of the Gebruede Netzsch Enterprisefailed mainly because:

- the target production of 2,000 m^2 of tiles have not been reached
- the proportion of rejects exceeded that of specified in the agreement. (6)

In addition numerous defects in the functioning of the equipment were listed (15). Some of them have been since then corrected. In fact the number of "Reservations" was reduced considerably. The major problem appears to be the presses which naturally are the heart of the manufacturing process. The maintenance engineers attribute the malfunctioning to the faulty operation of the oil-cooling systems and the Netzsch Company agreed to replace them. It seems, however, that the problems could go deeper. It is a well known fact that the Netzsch company has had frequent troubles with their presses elsewhere. This appears to be a very serious problem. Not only does the malfunctioning of the presses cause loss of production due to stoppage (during the five-day commissioning tests the lay-downs averaged 2 hours per shift) but the drops of leaked oil deposited on the pressed tiles caused blisters and therefore a considerable increase of rejects.

According to the Netzsch guarantee any defect of any press shall be repaired within 2 weeks from date of notification. If defects

exceed 30 days per year for the year for any single press, the manufacturer is obliged to replace at his own expenses the defective press by an equivalent one from Laeis, Sacmi or Giovelli:

One cannot but advise a strict adherence to the terms of this clause of the guarantee. Otherwise the presses might become in the future a constant source of troubles, delays, losses of production etc.

1.14.0 General Performances.

At the time of this consultant's visit things were looking considerably better that the March Commissioning Tests of lasr March would indicate. The output has been inching up to levels close to 2,00 m^2 per day inspite of the fact that the fundamental defects of the presses have not been eliminated yet. For this reason alone the achievement of an average output of 1950 m^2 per day so far reported cannot be considered permanent.

1.15.0 Quality.

Ocular examination of the product by this consultant indicates that the general quality of the products of the E.C.F. is comparable to that of those produced elsewhere. Results obtained by Kling-enfeld De-keramik GMBH, Department Ceramconsult of Klingemberg of F.R.G. (14) seem to confirm this impression even though one does not know just how the samples submitted for testing have been obtained. Normally the sampling proceedure would be indicated. The range of colors of finishes and textures which are offered is both wide and attractive.

1.16.0 Geoconsult

The fair conclusion must be that the Consultants so far performed their duties well. The short-comings, defects etc. that are observed should be put squarely at the door of the Netzsch company. Geoconsult might have erred some-what in selecting the above company to be the equipment supplier for this project. There is no doubt that the above is an excellent outfit particularly in the field of general pottery where its performance is unexcelled. While one would, naturally, want to

take advantage of Netzsch's undoubted international experience and its generally more than competitive pricing policy, one might have profitted by specifying Laeis,Dorst or SACMI prosses in preference to those offered by Netzsch. Perhaps a bit more in-depths investigation of the matter such as a survey of opinions among the users of hydraulic presses would have helped. In the meantime it is next to impossible to fully evaluate Geoconsult's performance as general administrators until Netzsch corrects all the defects and the plant starts operating as specified. This will, luckily be the case some time in 1984.

1.17.0 Technical Supervisory and Managerial Personnel.

Interviews with such personnel revealed that the degree of competence among them appears to be quite satisfactory. At some levels the extent of practical experience is considerable. The above technical personal appears to be for the most part well motivated and the impression this consultant gained is that their morale is at the present time quite high.

1.18.0 Up-to-date performance of the factory.

At the time of this Consultant's visit the commercialization of ECF products leaved something to be desired. This is being attributed to the depressed market conditions and competition from imports. Until recently, no import duties have been levied in the U.A.E., but this situation appears to have been corrected recently. This should enable ECF to raise its prices, which at the present allow only a quite low margin of profit. Data gathered at the plant indicate that the average cost at full capacity would be approximately Dhs. 18.75 per m^2 composed as follows:

Shale cost	0.40	Dh.
Glaze cost	3.00	,,
Diesel	2.00	,,
L P G	1.60	,,
Labour	3.09	,,
Spare parts	0.50	,,
Total of fixed Exp.		10.59 Dh.

Total of fixed Exp.		10.59 Dh
Sales Exp.	1.05 Dh	
General Admin. Exp.	1.90 ,,	
Amortization	4.46 ,,	
Bank interests	0.75 ,,	
Total Cost		18.50 Dh

Average sales price was reported to be Dh. 20. Same appears to vary according to monthly sales volume and the proportion of different qualities and finishes sold. The sales prices of A grade tiles appears to vary from 19.50 Dh and 20.00 Dh per m^2 B quality tiles sales prices are said to vary between 16.00 and 18.50 Dh per m^2 and the C quality prices are 13.00 to 14.00 Dhs.

ECF expects to achieve some savings as soon as LPG fuel is substituted for Dieselin the spray dryer. Some further savings could also be secured through the elimination of financial charges due to unsufficient working capital.

As regards sales a very promissing aspect is revealed by the favourable reception of ECF's products on foreign markets, particularly Saudi Arabia as has been reported by the Sales Department.

Geoconsult's 3 year forecast of June 1983 (17) anticipates the following return on capital:

1983	-	1.5 %
1984	-	7.7 %
1985	-	12.8 %

Such figures, if realized, would be quite exceptional. Difficult industrial undertakings in developing contries of which Ceramics is one example, are generally not expected to produce any profit for the first three years. Instead a loss is usually taken for granted for the first and second years.

1.20.0 Less Positive Aspects.

There appear to be two aspects of the present situation of the ECF which must be mentioned and to which solutions must be sought. Of these two the second is the logical and illustrating consequence of the first; they will be, accordingly, discussed in this order.

1.21.0 Management through Consultants; Conveniences and doubts.

Under the present arrangement with Geoconsult the Government of Fujairah and its arm, the Dept. of Industry & Economy have only an imperfect insight and little control of the operation of the ECF. This must be so as long as such sensitive fields of activity as administration, sales (marketing) research and follow-up of development and innovation are almost entirely beyond its control. Such a situation would probably be resented by most Boards of Directors.

It must be realized, however, that it can hardly be otherwise. The fact that ECF operates with 100 % of expatriates, from the lowest level of the work force to the upper management of the enterprise is significant in this respect. The problem is probably shared by most modern enterprises and activities in U.A.E. excepting that of agriculture and fishing. Never the less some way out must be found.

1.22.0 In-Plant Frit Production.

The second iregularity mentioned above and related to the first inconvenience was uncovered as a consequence of the complaint as to the high cost of the glaze coating as revealed in the manufacturing cost breakdown. Since the weight of the glaze coating at the factory is only slightly above that anticipated in the Feasibility Study (3) and not much out of line if compared with the usual industrial practice, the culprit here must really be the cost of the glazing materials. The idea that a saving might be obtained through the in-plant manufacture of frits surely should have some appeal. Geoconsult submitted in April 1983 two fesibility studies of plants with different production capacities. The rates of return found were 10 %

and 8.8 % respectively. Industrial projects giving rates of return in that range would probably be termed as mediocre investments. Furthermore, given the tendency of most feasibility studies to over estimate profits, the above projects would luckily produce no profit at all (11).

It is a well established fact that large frit manufacturers acquire their raw materials at discount prices because of the huge amounts they consume. In other words they buy by carloads while an individual consumer like a ceramics manufacturer would buy by the ton. Consequently the large frit manufacturer has a double advantage over the frit consumer; he is able to purchase his raw material at much lower prices and operating on a much large scale, his manufacturing costs are much lower.

Argueing in this way one might be missing an important point. Ceramics manufacturers that are obliged to produce for their market a great variety of colors are finishes, like ECF, are constrained to keep large stocks of glaze raw materials as frits and glaze stains. This necessity inflates inventories and tie-up considerable proportion of the working capital. This is especially so at the beginning of an enterprise when sales experience has yet to be accumulated. (Later, naturally, sales data are computerized and stocks kept accordingly)

For the time being, however, stocks of glaze raw materials that must be kept are bound to be large, especially due to the time factor, consequence of the large distance that separates the user from the frit supplier. From this viewpoint the in-plant manufacture of frits at E.C.F. makes a great deal of sense. If such a local frit manufacture could be developed, it would only be necessary to import the fluxing materials, i.e. boron compounds, lead oxide and perhaps zinc oxide in addition to opacifiers, Kaolin and glaze stains. The weight of imports will, therefore shrink by at least 50% , especially if the dehydrated forms of the boron compounds were employed in preference to the more usual hydrated one. The additional advantage of importing glaze raw materials instead of frits is, that the formers are more or less universal i.e. they will be used in all or at any rate most of the frits to be produced.

1.23.0 Formulation.

There remains the question of formulations. When this consultant broached this subject with Mr. K. Massad the answer given to him was that Dr. M. Massad would supply them. There is no doubt the Geoconsult might sub-contract the development of frits and glazes to fit the body used at the E.C.F. These days few frits are developed starting from the scratch. Most of the time, successful formulas are simply modified to fit the given body

This solution, however, leaves much to be desired. In the first place, successful formulation is an important asset of any enterprise. Furthermore, frit and glaze development is not a one-shot proposition. It is rather a continuous process because new glazes must be developed all the time and quality continually improved. There is no indication that E.C.F. has a glaze and frit man on its technical staff.

Since the decision whether or not to manufacture frits locally has not been yet reached the question of the technician might for the time be deferred.

One other thing must be considered at this time. According to what this consultant has learned the management of E.C.F. tentatively plans to use one of the melting furnaces at the Rockwool factory for smelting of the frits. This might ultimately work. This solution, however, concerns the actual manufacture of the frits. The antecedent frit development can not be attempted in a 500 tons per day furnace. Involved are intermediate steps in which the quantities smelted might vary from 1 to 50 kg. Some additional equipment, i.e. suitable crucible furnaces are required. It goes without saying that glaze and frit development is unthinkable without a thermal expansion apparatus. Same is equaly invaluable for glaze quality control. The apparatus developed by the British Ceramic Research Association and manufactured by the Malkin Co. of Stoke-on-Trent suggests itself.

Furthermore, should a positive decision be reached in the question of frit manufacture UNIDO's assistance in providing an expert in frit formulations and manufacture within the frame work of a Project that is being submitted at the same time, would be invaluable.

1.30.0 Possible Solutions

1.31.0 Co-Management

At least two possible solutions offer themselves to us. One would consist in having a co-manager at the E.C.F., directly responsible to the Government and of course appointed by it. This solution has its obvious drawbacks. First of all its cost would be considerable. Secondly, such a manager would have to possess a range of knowledge and experience in business administration and ceramic technical management. Such a combination is rare to find.

1.32.0 UNIDO Assistance.

The second possible solution to the problem at hand would involve the assistance of UNDP through UNIDO. This assistance would consist in providing 6 man-months per year of experts and consultants during the 3 years of the proposed duration of the project. Its main purpose would be to assist the Government of Fujairah through its Department of Industry & Economy by providing it with a more or less constant monitoring and advisory services in connection with the operation of the Emirate Ceramic Factory. Furthermore UNIDO experts and consultants would assist the Fujairah Government through its Department of Industry and Economy in identifying further ceramics projects in the Emirate and in evaluating their eventual potential.

As regards the E.C.F. UNIDO's experts and consultants would assist the Government of Fujairah in the following fields:

- Technical Management of the plant
- Production efficiency
- General Technical Trouble shooting
- Frit Development and Production
- Glaze Development and Formulation
- Quality Control
- Business Administration and Management
- Marketing and Sales Activities.

It is to be understood that the number of man-months utilized

per years would be contingent. That is the Department of Industry will be free to take advantage of the full six man-months in a given year during the duration of the project or limits itself to utilizing only part of the allotted man-months in which case the unused portion would be carried over to the next year. Equally, the fields of activities and the man-months devoted to each of them will be at the discretion of the Government. It would be convenient, however, that at least one man-month each year be reserved for the supervisor and co-ordinator of the project, who, keeping in close touch with the Department would co-ordinate the projects activities.

2.00.0 Other Ceramic Products in the Emirates.

2.10.0 Sanitary Ware.

The logical complement of the products of E.C.F. would have been sanitary ware. Unfortunately this possiblity has been preempted by a factory in Sharjah. One factory is certainly enough for a country of the size of U.A.E.

2.20.0 Pottery and Dinnerware.

The manufacture of the above products has seldom been a high profit activity. In fact the margin of profit is general[illegible] and the difficulties many. If it were a question of pro[illegible], jobs for the local population even a low-profit, high-risk industrial activity would have to be considered. Such is however, not the case in the Emirates;

The few industries there are operated with migrant labour. In the short time available to this consultant it was not possible to secure import statistics (kept in Abu Dhabi). But the demand was reported to be "small".

2.30.0 Refractories.

The logical basis for any evaluation of the demand for refractories in the Emirates would be import statistics. It was impossible to secure this information in the short time available to the consultant. As soon as it becomes available the present consultants is willing to prepare an Addendum to this report.

It might besaid at this point that the main demand for refractories in the Emirates would come from the cement producers.

A Geoconsult report of 1982 (12) lists 7 Cement plants in operation with a total output of 7440 tons per day. Two plants were reported to be under construction with a combined capacity of 4800 tons per day and one being under study with an anticipated output of 1670 tons per day. Their demand for refractories would be considerable. The varieties used usually range from fire clay, high alumina and basics (most probably of the chrome-magnesite type; smaller rotary Kilns frequently prescind from the use of basic refractories entirely their high temperature zone being then lined with alumina blocks generally of the 70 % $Al_2 O_3$ type. A one by one survey of these plants would be necessary to assess the type and size of their requirements. The basis of any refractory industry in any country, developed or developing are fire clay refractories followed by those of the high alumina class.

Unfortunately in their extensive geological survey Geoconsult found " no clays with the desired properties or in sufficient amounts" in Fujairah. As to Bauxite there is none of it in Fujairah either (12). This would, by itself be not much of a handicap for a refractories industries either, because these days practically every country satisfies its demand by import of calcined banxite from Guiana, Surinam or Republic of China.

Geoconsult presented in 1982 a Feasibility Study to the Government of Fujairah (12) for a combined refractories plant envisaged to produce 5,000 tons/year of aluminous refractories (fireclay and high alumina) and 10,000 tons/year of basics using

10,000	tons	per	year	of	Dolomite
6,000	,,	"	"	"	Magnesite (*?)
1,000	"	"	"	"	Chromite
6,000	"	"	"	"	Forsterite
2,500	"	"	"	"	Kaolin (*)
2,500	"	"	"	"	Aluminosilicates (*)

The materials marked with an asterisk were to be imported. Forsterite was to be manufactured from local olivines and serpentines (Dunite). At the present day there is little use in the world for

pure chromite refractories and the project envisaged the manufacture of chromemagnesite and Magnesia-Chrome products. The report itself is highly skeptical about the size of Fujairah deposits of Magnesite and of its quality and anticipates too the necessity of its importation. It must also be mentioned in this context that the use of Forsterite refractories has decayed since their simultaneous development in the 20th in the U.S.A. (Harbison-Walker, Harvey and Birch) 2nd in Europe (Goldschmidt) They are seldom used these days.

It would appear that the above project appears not to be quite realistic for a country with little local consumption basis (which is the steel industry normally using rough by 47 % of all refractories produced). A refractories plant in the Emirates would therefore, be largely dependent on exports. This is not a satisfactory basis for an industry requiring an investment as high as the proposed one. Also unmentioned is the very important and significant fact that basic and aluminosilicate refractories can not be manufactured in the same plant because of the danger of mutual contamination. Normally even Dolomite and Magnesite should be treated separated from each other.

It would appear that the project in its present form would depend heavily on Dolomite, a materials that is not exactly in short supply over the world. The magnesite available in Fujairah is of mediocre quality and its deposits not sufficient; imports are therefore envisaged. Only local chromite is consided of sufficient quality and abundance. The feasibility of a refractories plant in Fujairah is therefore questionable.

A large refractories plant was being planned for the steel industry in Yubayl, Saudi Arabia. The Geoconsult report (12) estimates the consumption of dolomite refractories of Yubayl (and Abu Dhabi strangely) at 20,000 tons per year . That the above development in Yubal endangers the feasibility of a refractories plant in Fujairah very considerably is recognized by the Geoconsult report.

As to the dolomite consumption of the Abu Dhabi steel industry the time available to this consultant was too short to permit any investigation. Until the nature of the process employed in Abu Dhabi

is known no opinion can be expressed about its dolomit consumption it being known that dolomite refractories are used mainly in the BO process and in fetling the bottom of O H furnaces.

3.00.0 Exception

This consultant was also expected to look into and report on the general administration of the Emirate Ceramic Factory. In this respect he was unable to comply due to multiplicity of reasons. In the first place he lacks the required expertise. Furthermore the actual administration appears to be an umbrella controlling in addition to the Emirates Ceramic Factory also with the Rockwool and Marble and Tiles factories which were, naturally, outside this consultant's frame of reference.

ANNEX - I

List of documents consulted.

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18. Emirates Ceramic Factory, Provisional Plan 1983,
Geoconsult, undated.

19. Erection and commissioning of Fujairah Ceramic Factory,
Geoconsult, undated.

20. Reservation: Report prepared by Mr. Briones, October 9, 1983.

ANNEX- II

CONTACTS AND INTERVIEWEES

Dr. Salem Abdo Khalil, Technical Advisor,
Dept. of Industry & Economy,
Govt. of Fujairah, U.A.E.

Dr. Ahmed Khairy Mohamed, Economist,
Dept. of Industry & Economy,
Govt. of Fujairah, U.A.E.

Eng.K. massad, General Manager,
Emirates Ceramic Factory,
Fujairah, U.A.E.

Managers and Technical Personnel of the
Emirates Ceramic Factory.

ANNEX-III

Addendum - 1

As recognized in the body of the report, the commissioning of the plant has been delayed considerably. The concern of the Government with ultimate responsibility for the above delay is well justified.

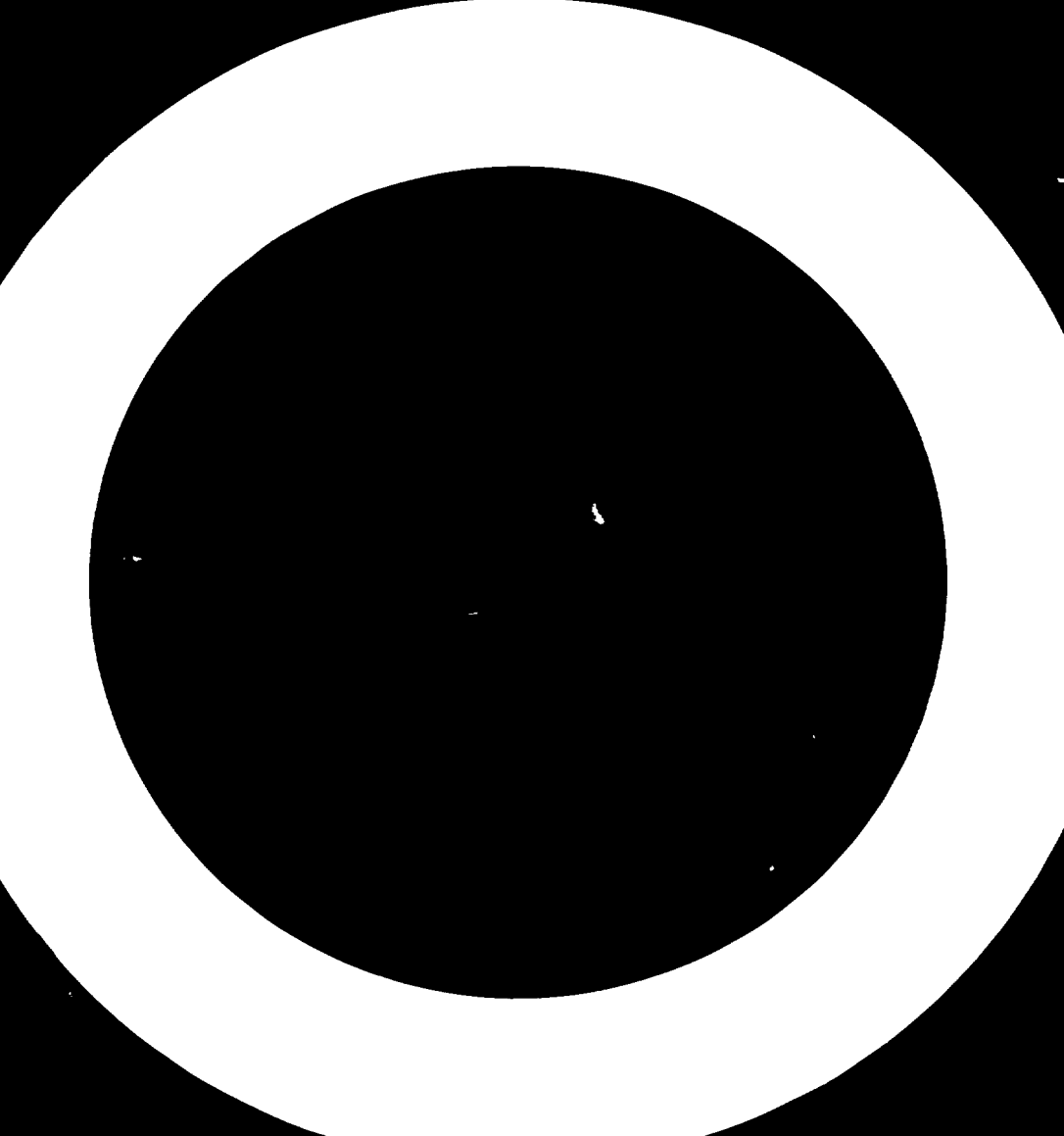
A report dated October 9, submitted to this Consultant by Mr.Superio Briones, the Plant Manager lists 8 reservations in comparison with the 17 listed in his previous report of March 30. Of the 8 only two have anything to do with the commissioning of the plant. These two point concern the presses. Since the trouble has been traced to inadequate oil cooling systems Netzsch promised to replace them. It takes time to manufacture same and to get them to Fujairah, so it seem impossible that commissioning tests could be run before the end of this year. March would be a much more likely date. Whether the above replacement will definitely solve the problem can not be taken for granted. The oil leakage may well be the consequence of the decreased oil viscosity due to its overheated condition but this is by no means certain.

As to the ultimated responsibility for the repeated delays it rests definitely with the Netzsch Company. Of course, while perhaps legally not accountable for the delays and the damage to the factory, Geoconsult can hardly be entirely exonerated. They should have known better than to approve the acquisition of presses of dubious reputation. This is what Consultant are here for.

ANNEX IV

PROJECT DOCUMENT

Assistance to the Emirates Ceramic Factory, Fujairah



UNITED NATIONS DEVELOPMENT PROGRAMME

Project of the Government of
The United Arab Emirates

PROJECT DOCUMENT

Title: Assistance to the Emirates Ceramic Factory, Fujairah

Number: UAE/83/ /A/01/37 Duration: 3 years

Primary function: Direct support

Secondary function:

Sector:(Govt. Class.): Industry UNDP: Industry (0500)

Sub-sector: (Govt. Class.): UNDP: Manufacturing Industry (0520)

Government Implementing Agency: Department of Industry and Economy, Government of Fujairah

Executing Agency: United Nations Industrial Development Organization (UNIDO)

Estimated starting date: January 1984

Government input: UNDP input: US $ 198,400

Signed: _____ Date: _____
On behalf of the Government

Signed: _____ Date: _____
On behalf of the Executing Agency

Signed: _____ Date: _____
On behalf of UNDP

PART I - LEGAL CONTEXT

This project document shall be the instrument (therein referred to as a Plan of Operation) envisaged in article I, paragraph I, of the Assistance Agreement between the Government of the United Arab Emirates and the United Nations Development Programme signed by the parties on 19 January 1983.

PART II - THE PROJECT

a. Development Objectives

1. Strengthening the economy of the Emirate of Fujairah and through it also that of the whole country;

2. Enhance earning of foreign exchange;

3. Improve the efficiency of local industry, thus avoiding loss of revenue;

b. Immediate Objectives

The immediate objectives of the project are to:

1. Provide the Government with more or less continuous insight into the operation of the Emirates' Ceramic Factory by monitoring progress, performances etc. in the activities of:

   - Technical management
   - Efficiency and output
   - Business administration and management
   - Marketing and sales;

2. Secure the Emirates Ceramic Factory self-sufficiency and independance in the procurement of frits and glazes;

3. Maintain the Government and the Emirates Ceramic Factory abreast of new developments in the industry, in the field of technical innovation and designs;

4. Provide the Government of Fujairah with ad-hoc backstopping in the matter of new industrial projects.

c. Special Considerations

None.

d. Background and Justification

The Emirate of Fujairah has no oil and gas resources and its Government has turned to industrial development to provide revenue to be used in public works etc. Among the industrial projects initially considered was structural clay products. This possibility resulted upon closer examination not to be feasible because of the

present ubiquity of sand-cement and concrete products. The Government's attention then turned to wall and floor tiles, the manufacture of which turned out feasible under the conditions of the study.

An international consulting company was consequently retained to take care of project management during design, engineering, erection and commissioning. The project was approved by the Government of Fujairah and funds equal to DH 29,760,000 appropriated by the Abu Dhabi Fund for Arab Development. An agreement was signed with a German equipment manufacturer and another German manufacturer contracted to supply the kiln. Actual mechanical completion of the kiln was achieved by the end of September 1982 and production started in November of the same year.

The factory has a capacity of 600,000 m^2/year of ceramic floor and wall tiles using a single-clay body of domestic origin and imported glazes and frits covering a wide range of colours and textures.

In September 1982, the Government of Fujairah entrusted the consulting company with the technical and commercial management, administration and sales organization of the enterprise. According to the terms of the management agreement, the consulting company appointed permanently in Fujairah three managers from their own organization. Due to the peculiar social conditions of the Emirates, all supervisory and the remaining managerial and clerical positions were filled with expatriates and even the workforce was 100% of foreign origin.

Commissioning of the plant was considerably delayed. The first tests conducted in March 1983 failed mainly due to deficiencies of the mechanical equipment. New tests are now scheduled for before the end of 1983, but it appears questionable whether the equipment contractor will be able to supply replacement for some of the defective equipment in time for the commissioning tests to be conducted as planned.

It appears natural that the Government of Fujairah which maintains its contact with the factory through its Department of Industry and Economy should feel concerned with the apparent lack of insight into and control of the everyday operation of the factory, consideration that the most sensitive key positions are directly occupied with people from the consulting company's own organization and that even the foreign technical and managerial personnel could be thought of as owing their allegiance to the consulting company rather than to the Emirates Ceramic Factory or the Government of Fujairah.

Unfortunately, the Government's Department of Industry, staffed with competent but constantly overworked functionaries do not have the time to oversee the factory's operation. The feed-back necessary for an effective intervention in the factory's running might also be lacking.

Conscious of this situation the Government of Fujairah requested UNDP to provide a consultant for an initial period of two weeks in order to assess the situation and advise it of possible solutions. The present project document which was formulated during this mission reflects the needs of the Government.

e. Outputs

The project is ultimately expected to produce:

- An industrial organization within the Emirates Ceramic Factory independent of uncontrollable outside sources of inputs;

- An effective control of the Government of Fujairah over the industry;

- A range of new product designs and finishes backed by own manufacturing capacity for glazes and frits;

- An enhanced flexibility and effectiveness of the factory to meet the challenges of a highly competitive market.

f. Activities

In order to produce the above outputs, a team of international short-term consultants will:

- Provide a link between the Department of Industry of the Government of Fujairah and the Emirates Ceramic Factory in order to maintain abreast of the development and general performance of the latter

- The consultant will also suggest ways to overcome problems and introduce improvements in the field of:

  - Organization of technical management
  - Optimization of output
  - Improvements of quality
  - Streamlining of administrative structure
  - Improvement of designs and finishes
  - Development of new frits and colour effects
  - Control of preventive maintenance and repair
  - Implantation of improved marketing methods
  - Surveying and opening of new markets
  - Identification, analysis and evaluation of new industrial projects in the field of ceramics.

g. Inputs

1. Government Contribution

- Transportation for the expert and consultant by means of one car assigned in exclusivity to each of them while executing his duties;

- Services of an expert driver for the exclusive use of the experts and consultant while on duty in Fujairah;

- Counterpart staff to work with the internationally recruited experts and consultants while on duty in the country:

- Secretarial, clerical and administrative service connected with the duties of the internationally recruited experts and consultants.

2. UNDP Contribution

- One Project Co-ordinator for four missions of one month each.

- Altogether 18 man-months of consultants spread over three years to cover specific fields chosen by the Government of Fujairah, in consultation with the Project Co-ordinator, but generally competent in activities dealing with:

  - General organization of technical management
  - Business administration and management
  - Marketing and sales
  - Labor efficiency and utilization
  - Quality control
  - Technical troubleshooting
  - Designing of finishes and decoration
  - Development of frits
  - Design and organization of frit-making facilities
  - Preventive maintenance of equipment and prevention of breakdowns
  - Assessment of new industrial projects in the Emirates.

h. Preparation of Work Plan

A detailed work plan for the implementation of the project will be prepared by the Project Co-ordinator in consultation with the Department of Industry at the beginning of each 12 month period. The agreed work plans will be attached to the project document as Annex and will be considered part of that document.

i. Preparation of the Framework for Effective Participation of National and International Staff in the Project

Since the industry is operating with internationally recruited expatriates, a situation which is expected to continue during the duration of the project, there is not much that can be done in this respect. Should the situation change, however, a framework for effective participation of national and international staff in the project will be prepared by mutual consultation, discussion and agreement between the national and international staff.

j. Development Support Communication

No special measures are required.

k. Institutional Framework

The corporation comes under the Department of Industry and Economy of the Government of Fujairah. The enterprise is managed by a General Administrator appointed by the consultant under contract with the Government. He is assisted by two managers, one sales and production planner-co-ordinator and one responsible for sales, also appointed by the consultant. Furthermore, there is also a body of technical production managers and supervisor hired by the consultant and dependent on it.

l. Prior Obligations and Pre-requisites

Since the Government has already constructed the factory and contracted the consultant to manage it, there appears to be no prior obligation and pre-requisites except the provision of counterparts to save the Government's desire to select them among the files of internationally recruited technicians presently operating at the factory.

m. Future UNDP Assistance

Subject to a positive recommendation of UNIDO, UNDP might be requested to provide assistance for a continuation of the present project. This continued assistance would comprise as many follow-up missions of one to three months, as required.

PART III - SCHEDULES OF MONITORING, EVALUATION AND REPORTS

a. Tripartite Monitoring Reviews

Given the particular character of the project, only one Tripartite Review is scheduled to take place towards the end of the project.

b. Evaluation

The project will be subject to evaluation, in accordance with the policies and procedures established for this purpose by UNDP. The organization, terms of reference and timing of the evaluation will be decided by consultation between the Government, UNDP and the Executing Agency concerned.

c. Progress and Terminal Reports

The internationally recruited short-term experts shall submit draft reports to the Executing Agency for onward transmission to the Government. A terminal report will be submitted at the end of the project by the Project Co-ordinator.

UNIDO

PROJECT BUDGET/REVISION

COUNTRY	4. PROJECT NUMBER AND AMENDMENT	5. SPECIFIC ACTIVITY
UNITED ARAB EMIRATES		32.1.B

PROJECT TITLE

Assistance to the Emirates Ceramic Factory, Fujairah

	INTERNATIONAL EXPERTS (functional titles required except for line 11-50)	16. TOTAL m/m	16. TOTAL $	17. 1984 m/m	17. 1984 $	18. 1985 m/m	18. 1985 $	19. 1986 m/m	19. 1986 $	20. m/m	20. $
01	Project Co-ordinator	4	40,000	1	10,000	1	10,000	2	20,000		
02											
03											
04											
05											
06											
07											
08											
09											
10											
11											
12											
13											
14											
15											
16											
11-50	Short term consultants	18	150,000	6	50,000	6	50,000	6	50,000		
11-99	Sub-total - International experts[a]	22	190,000	7	60,000	7	60,000	8	70,000		

REMARKS

[a] If more than 16 experts are required check here ☐ and attach continuation sheet 1A. This sub-total *must* include all experts.

UNIDO

PROJECT BUDGET/REVISION

4. PROJECT NUMBER UAE 32.1.B	16. TOTAL		17. 1984		18. 1985		19. 1986		20.	
	m/m	$	m/m	$	m/m	$	m/m	$	m/m	$
OPAS EXPERTS (functional titles required)										
12-01										
12-02										
12-03										
12-99 Sub-total—OPAS experts[b]										
ADMINISTRATIVE SUPPORT PERSONNEL										
13-00 Clerks, secretaries, drivers										
13-50 Freelance interpreters (non-UNDP projects)										
13-99 Sub-total—Administrative support personnel										
UN VOLUNTEERS (functional titles required)										
14-01										
14-02										
14-03										
14-04										
14-99 Sub-total—UN Volunteers[b]										
15-00 Project travel										
16-00 Other personnel costs (including UNIDO staff mission costs)		4,000						4,000		
NATIONAL EXPERTS (functional titles required)										
17-01										
17-02										
17-03										
17-04										
17-05										
17-99 Sub-total—National experts[b]										
19-99 TOTAL—PERSONNEL COMPONENT	22	194,000	7	60,000	7	60,000	8	74,000		

[b] If additional individual budget lines are required, check here ☐ and attach continuation sheet 1A. These sub-totals must include budget lines listed on page 1A.

UNIDO

PROJECT BUDGET/REVISION

PROJECT NUMBER UAE 32.1.B	16 TOTAL m/m	16 TOTAL $	17. 1984 m/m	17. 1984 $	18. 1985 m/m	18. 1985 $	19. 1986 m/m	19. 1986 $	20. m/m	20. $
SUBCONTRACTS										
21.00 Subcontracts										
TRAINING										
31.00 Individual fellowships										
32.00 Study tours; UNDP group training										
33.00 In-service training										
34.00 Non-UNDP group training										
35.00 Non-UNDP meetings										
39.99 TOTAL - TRAINING COMPONENT										
EQUIPMENT										
41.00 Expendable equipment										
42.00 Non-expendable equipment										
43.00 Premises										
49.99 TOTAL - EQUIPMENT COMPONENT										
MISCELLANEOUS										
51.00 Sundries		4,400		600		600		3,200		
55.00 Hospitality (non-UNDP projects)										
56.00 Support costs (CC and DC projects only)										
59.99 TOTAL - MISCELLANEOUS COMPONENT		4,400		600		600		3,200		
SURPLUS/DEFICIT										
81.00 Surplus/Deficit (ADM/FS use only)										
99.99 PROJECT TOTAL		198,400		60,600		60,600		77,200		
[c] COST SHARING (UNDP/IPF projects only)										
[c] NET UNDP CONTRIBUTION	22	198,400	7	60,600	7	60,600	8	77,200		

[c] For information only - *not* for PAD input