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EXPERT ASSISTANCE FOR THE ESTABLISHMENT OF A PESTICIDE
PILOT PLANT UNDER A SOFT LOAN ADVANCE FROM
THE ITALIAN GOVERNMENT

SI/URT/86/875/11-03

UNITED REPUBLIC OF TANZANIA

Technical report: Effect of copper oxychloride facility
on Moshi Complex Findings*

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

Based on the work of Dr. Frederick Sager, chemical industries consultant

Backstopping officer: B. Sugavanam, Chemical Industries Branch

United Nations Industrial Development Organization

Vienna

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1. Background and scope of the assessment.

- 1.1 The Government of Tanzania, in its aim to reconstruct and develop the agricultural sector has given priority to the establishment of a pesticides manufacturing and formulation complex at Moshi.
- 1.2 The complex is expected to generate new Government revenues in form of taxes and custom duties, new employment at the site and at associated industries, and to supply the agriculture with plant protection materials according to the local needs and conditions, and to improve the safety and output of the national agriculture in general.
- 1.3 Quoting from a letter of the ministry of industries and Trade to the Resident Representative of the U.N. in Tanzania, dated 16 October 1986, "the project's feasibility study was prepared way back in 1979/80 by two experts from UNIDO following a request from the Government of Tanzania.

The feasibility study recommended the establishment of a pesticides complex for formulating/manufacturing the following products:

- Copper oxychloride 3000 t, y
- Wettable powders 3000 t, y
- Granules 2000 t, y
- Herbicides flowables 1500 t, y

The products are intended to cater for the domestic market and to some extent for export to the neighbouring East and Central African Countries. The estimated cost for the project then (1980) was shs.126.97 million of which shs.60.34 million would have been in foreign currency.

Soon after the project's feasibility study was completed an investment proposal was prepared and approved by the NDC Board for implementation. Efforts to secure foreign financing were made through IIB and the World Bank which approved an application for said funds. However before all formalities were completed to secure the pledged funds the World Bank withdrew their offer. Effort to find alternative sources of foreign funds succeeded in 1984 when the Italian Government offered to extend a soft loan to the Tanzanian Government for financing the project. By the time the Italian Government loan was offered the project's feasibility study was already out of date and it was decided to update it in order to work out realistic cost estimates. The work for up dating was given to M/s. TISCO." ref. Attachment 7.2.1

1.4 Soon after this reappraisal tenders for hard- and software for the project were invited, and Tecnimont, the engineering arm of the Montedison Group of Companies was chosen. The Agreement was signed in december 1984, foreseeing 28 months from the effective date of the contract for the start of the trial operations.

Of the total contract price of US Dollars 12.38 millions, the Italian Government had originally offered 7.5 millions for meeting the project's foreign cost. This offer was extended in july 1985 to cover the lot.

Due to delays in the implementation of the italo-tanzanian Financial Convention, the contract became effective only in mid-august 1986, moving the schedule date for the trial operations to april 1989 at the earliest.

1.5 Since the inception of the project, UNIDO had supplied assistance through a consultant at intermittent periods with the aim of strengthening local capabilities in its implementation, and for updating the feasibility study, which was last updated by TISCO in 1984. The consultant comes to the conclusion in this respect, "that the project is economically sound", while drawing attention "to possible constraints in financing, which may enforce a reduction of its scope", ref. att's 7.2.2 and 7.2.4.

1.6 With advancing implementation of the project, the initially reported very good customer/contractor relations became exacerbated over the customer's objections to the copper oxychloride know-how, raised in the course of the third coordination meeting, 11 and 12 nov. 1987, and the UNIDO consultant's stand against this section of the project.

1.7 In this context the present assessment is to contribute in cooperation with the backstopping officer to a clarification to this end, as spelt out in job description SI/URT/86, 875, 11-03.

2. The documentation on the subject matter.

2.1 Available for perusal were five UNIDO reports, covering the period from April 1986 to end 1987. Four of these reports are by one and the same consultant, dealing with matters concerning the implementation of the project, except one, which also contains an updated version of a feasibility study by the Tanzanian consulting firm TISCO, prepared in 1984 as an updating, in its turn, of an earlier feasibility study by UNIDO in 1979, 80. The fifth report—by another consultant deals with civil engineering matters concerning the off sites of the Moshri plant.

For easy reference these reports are catalogued with their respective connotations and highlights under attachment 7.2.

2.2 Also available was the Contract-Agreement of December 1984 between National Chemical Industries and Tecnimont.

2.3 For practical reasons the copies of the UNIDO reports and the Contract-Agreement are not attached here, but are kept in the backstopping officer's files.

2.4 Further information on the subject matter was received from Tecnimont by telex dated 3 March 1988 (attachment 7.4), as an outcome of the UNIDO/Tecnimont meeting in Vienna, on 22 February 1988, ref. minutes of meeting by the backstopping officer of 23 February (attachment 7.3)

2.5 In the course of the meeting of 22 February, Tecnimont also agreed in principle to providing the "proven and operating technology for copper oxychloride", item 3, page 2 of the minutes. This detail deserves highlighting at this point, as it is recorded as one of the two major sources of disagreement between the customer and the contractor, the other one being the deletion, respectively the postponement of the copper oxychloride facility, ref. para 1.6, and attachment 2.4 and 2.5.

3. The rationale for the approach to the assessment.

- 3.1 The principle support to this aim was to have been supplied by the UNIDO report identifiable under attachment 7.2.2, and the title " revised financial analysis of the project."
- 3.2 Normally, and to start with, the copper oxychloride plant would have been deleted from the accounts, and this rephased project would then have been compared to the original one, in respect to whatever purpose would have been deemed appropriate.
- 3.3 This mode of proceeding did, however, not prove possible for a number of reasons of different nature and origin, with at the root of it, a.o., the carry over of assumptions, into successive surveys, with less and less relation to reality.
- 3.4 Thus, the 1987 edition deals with capital structure and financing pattern originating from earlier reports, with the 21% interest for long term loan and overdraft blatantly contrasting with the 1,5% soft loan from Italy, effective since August 1986.
- 3.5 Thus, as far as evaluation is concerned, the project is in square one, although there is an effective government loan, and an engineering/equipment supply and construction contract in vigour.
- 3.6 In order to resolve the situation at this point and to supply an answer to the query on the role of the copper oxychloride facility, an approach was worked out, consisting in the concomitant use of three evaluation tools, and specifically in:
- a) incremental analysis, best illustrated by reference to table 1 to 4,
 - b) payback time, which is fairly widely used, particularly, where long term cash flows are difficult to forecast, since no information is needed beyond the break-even points. It is therefore used with preference as a screening device for projects in times of uncertainty, i.e. in situations similar to the present one, and rounding off this combination
 - c) sensitivity analysis, as a complement, for checking and refining results of a) and b).
- Inputs consisted, on the one hand, of a minimum of unprocessed basic data from ref. 7.2.2, i.e. investment, direct operating cost, material and products cost, with due reservation to actuality, but corrigible by sensitivity analysis, and, on the other hand, of a break-down by Tecnimont, ref. 7.4 of major contract costs with percentage incidence on copper oxychloride facility.

4. The findings concerning the incidence of the copper oxychloride facility on the expected project outputs and development objectives of the Moshi project.

4.1 General

- 4.1.1 For correctly weighting the findings in the present context it should be remembered, that they are the result of incremental evaluation which, thanks to the very virtue of the method, allows uncertainties on both sides of the count to cancel each others out. The emphasis therefore is on the incremental, and not on the absolute values of the objects compared. As outlined in the "rationale" para. 3, this approach was necessitated by the uncertainties contained in the report attachment 7.2.2 which would have made this assessment impossible.
- 4.1.2 In this connexion it is worth underlining at this point, that reference to Alt. 1 and Alt. 2 used in the tables 6.1 to 6.4 merely reflects the formal approach of the incremental evaluation method and should therefore be interpreted in that sense only. In other words, the copper oxychloride facility being merely an integrated part of the whole project, the percentage breakdown does not necessarily imply that the alternative 1 of the project would represent as such the viable solution.
- 4.1.3 The findings are viewed hereafter
- a) from the angle of the declared government aims, and
 - b) from the entrepreneur's point of view.
- 4.1.4 Extracting from the reports att't. 7.2.1 and 7.2.2, the Moshi project is to lead to:
1. the supply of plant protection materials according to local needs and conditions, resulting in
 2. improvement in the safety and the output of national agricultural production,
 3. related integrated development coupled with stability of growth,
 4. new employment at the plant, and at associated industries,
 5. increased professional capabilities at all levels,
 6. foreign currency saving, import substitution,
 7. generating substantial foreign currency earnings from export to neighbouring countries,
 8. new government revenues,
 9. creating new physical and institutional infra-structure,
 10. local capital formation.

4.2 The incidence of the copper oxychloride facility in respect to the declared government aims.

- 4.2.1 It would go beyond the allowances made for this assessment, to study in detail the effect of the project on each of the government aims quoted, exception made for the foreign currency saving, which has been calculated and demonstrated by table 6.4, and for demand and market size for products, which, in its turn, has been checked as far as this is possible out of Vienna.
- 4.2.2 market surveys have been carried out in conjunction with feasibility studies in 1979/80 by UNIDO experts; they were subsequently updated by TISCO in 1984, and again updated by a UNIDO consultant in 1987. The successive surveys all concluded positively, with the last one, att't 7.2.5, stating on page 8, that "the Moshi plant when operated at full capacity will provide 41 % of W.P. and 28.4 % liquid requirements."
- 4.2.3 Summing up the preliminary weighting of the incidence of the copper oxychloride facility in respect to the various government aims leads to the global conclusion that the mere fact of a genuinely local pesticides production makes the fully fledged project superior to its amputated version.

4.3 The incidence of the copper oxychloride facility in respect to the entrepreneur's point of view.

- 4.3.1 Tables 6.1 through 6.4 illustrate the incremental effect on the profitability from the entrepreneur's point of view, as based on the breakdown of the cost figures provided by the contractor, and the incremental cost/income data calculated, in accordance with the "rationale", para.3, on a minimum of processed data extracted from report 7.2.2 with due reservation as to their actuality, -and presented in such way as to allow an easy re-adjustment of the key data.
- 4.3.2 Tables 6.1 through 6.4 show the effect of the copper oxychloride facility on the profitability of the integrated project (alternative 2).

4.3.3 It will be appropriate at this point to recall that the original feasibility study in 1979,80, and its first updating by TISCO in 1984 showed the project to be highly profitable, and that even the last updated edition by a UNIDO consultant in 1986/87 confirmed the earlier findings in spite of the 3.0 % devaluation that had taken place since, and the complete abstraction from the Italian soft loan. While still maintaining the distancing from the pertinent report, att't 7.2.2, for reasons given in para.3.3, it is nevertheless thought useful here to quote therefrom, p.3, para.1, that "the very substantial devaluation of the Tanzanian Shilling did not drastically alter the feasibility of the project. Already the first year operation is likely to make profit and accumulated rise to Tanzanian shillings 3,481 (millions, obviously) by the end of the 10th year, which is about three times higher than the profit envisaged by the feasibility study prepared by TISCO in 1984, before the 300 % devaluation of T.sh.", and further on, from same page, para.7, that "economically the project is to be considered solid and profitable yielding substantial foreign exchange savings, a net present value of T.sh. 1,910 million at a 22% discount rate, new government revenues (in form of taxes and custom duties), new employment at the plant and co-operating industries and above all a better supply of plant protection materials so important for an effective, up-to-date agricultural production."

4.3.4 in order to illustrate the situation in respect to the total initial fixed investment (TIPI), the foreign loan, and the local capital component, in the light of the percentage breakdown of project costs, with due regard to the observations 4.1.1 and 4.1.2, the respective data have been tabulated hereunder for easy reference:

	TIPI	covered by It.loan	other costs
Alt.2:			
all, in M Tsh equivalent	1,866.106	619.000	1,247.106
all, in MM US dollars "	37.322	12.38	24.94
Alt.1:			
all, in M Tsh equivalent	783.764	259.950	523.814
all, in MM US dollars "	15.675	5.199	10.476

For definition Alt.1 and Alt 2, refer table 6.1, p.10

5. Conclusions and recommendations.

- 5.1 In order to prove of any practical value, the findings of this assessment in respect to the rephrasing of the Moshi project need to be interpreted on two levels, i.e.
- 5.1.1 the level of facts, represented by the progress in the implementation of the project since August 1986, the date the italo-tanzanian Financial Convention came into vigour, with the copper oxychloride section being pars in toto, or more explicitly, being an integrated part of the project, and dealt with as such in the execution of the contractor's works and services, with 15% down payment effected, and as proved by the most business-like coordination meeting number 1 and 2, Sept. 1986 and April 1987, respectively, and,
- 5.2.1 the level of arguments around these facts, which unfortunately for the project, came progressively out of phase with the former, to lead to a head on collision in what was to have been the third coordination meeting, with the resulting deadlock over the copper oxychloride technology, and this, 3 years after the signing of the contract, and one year of effective implementation. The problems related to the copper oxychloride technology have been dealt with under para. 2.5 above, and can be considered to be on the way of being resolved.
- 5.2.2 As to the other main argument, i.e. the rephrasing of the project by either deleting or postponing the execution of the copper oxychloride facility, advocated by the UNIDO consultant on the ground of possible financial constraints, there is no record to be found in any of the reports, that the customer shared this view, exception made to the third "coordination meeting", when the customer - from a completely different angle - took the position to prefer revoking the contract, rather than proceeding with copper oxychloride technology foreseen in the project.
- 5.2.3 Now, as for the pros and cons concerning the copper oxychloride facility, as seen from this angle, the findings lead to the conclusion, that although this section of the complex reduces the profitability from the entrepreneur's point of view, it is essential for the realization of the development objectives expected from the Moshi plant, and that a trade-off in this respect is more than justified. Another point, additional to the above, and not to be neglected in this connexion, is, that number of pesticides required for the version "formulation only" have been outlawed in the exporting countries and may give rise to uncertainties in supply and application.

5.3.1 With facts and arguments now having been brought down to one common level, it appears advisable at this point to continue with the status quo, or better expressed, to take it up again, and to concentrate on prompt and speedy implementation, avoiding excessive preoperational expenses and related distortions of the time value of money for the customer, and unforeseen engineering expenses for the contractor, and, last but not least, to monitor the sources for local currency participation.

Table 6.1

Abridged Incremental Cost-Income Data concerning
the copper oxychloride facility of the Tanzanian
pesticides Project

(in thousands Tsh/y)

	Alt.1	Alt.2	
A. Sales Revenue	1,425.061	1,671.414	246.353
Expenditures:			
raw materials	562.780	668.580	(105.800)
packing material	20.876	21.975	
fuel	-	3.384	
water, power	13.573	20.360	
salaries, wages	4.239	7.064	
admin. OH's	8.800	14.600	
vehicles operat ⁿ	2.500	3.500	
repair & maintenance	19.700	49.250	
<hr/>			
B. Production Cost	632.468	788.713	(156.245)
Gross Income	792.533	882.701	90.108
depreciation (d)	78.276	186.610	(108.234)
interest (i)	78.376	186.610	
income- d-- i	635.841	509.481	
tax (t)	317.920	254.740	
C. Income - d-i-t	317.920	254.740	
total initial Fixed Investment (TIPI)	783.764	1,866.106	(1,082.342)
Payback Time, years	2.46	7.32	negative

-depreciation by straight line method
 -interest as average on soft loan and
 feasibility study, attachment 7.2.2 , pp. 8 & 21
 -other data based on attachment 7.2.2 as ab., and 7.4

- Alt.1 = Alt.2 - copper oxychloride facilities

- Alt.2 = present project

Note: The interpretation of the Tables 6.1 through 6.4 should be made in conjunction with para 4.1.1, 4.1.2 and 4.3.2.

Table 6.2

Sensitivity analysis
on the effect
of variations of the
Total Initial Fixed Investment Cost (TIFI)
(reference Table 1)
-thousands \$/sh/y-

	Alt.1		
	base case	plus 10%	minus 10%
TIFI	783.764	862.440	705.387
gross income	792.593	792.593	792.593
depreciation (d,	78.376	86.214	70.538
income - d	714.217	706.379	722.055
interest (i)	78.376	86.214	70.538
income - d - i	635.841	620.156	651.517
tax (50%)(t)	317.920	310.082	325.758
income - d-i-t	317.920	310.082	325.758
Payback Time, years	2.46	2.78	2.16
	Alt.2		
TIFI	1,866.106	2,052.716	1,679.495
gross income	882.701	882.701	882.701
depreciation (d,	186.610	205.271	167.949
income - d	696.091	677.430	714.752
interest (i)	186.610	205.271	167.949
income - d - i	509.481	472.159	546.803
tax ,50% (t,	254.740	236.079	273.401
income -d-i-t	254.740	236.079	273.401
Payback time, years	7.32	8.69	6.14

Table 6.3

Sensitivity analysis
on the effect
of variations of the
interest rate for the
total initial Fixed Investment (TIFI)
(reference Table 1)
- thousands Tsh/year -

	Alt.1		
	base case		
interest rate	10%	15%	20%
TIFI	783.764		
gross income	792.593		
depreciation (d,	78.376		
income - (d)	714.217	714.217	714.271
interest (i)	78.376	117.564	156.746
income -d-i	635.841	596.653	541.797
tax (t)	317.920	298.326	270.098
income -d-i-t	317.920	298.326	270.098
Payback Time, years	2.46	2.62	2.9
	Alt.2		
TIFI	1,886.108		
gross income	882.701		
depreciation (d,	186.610		
income - d	696.091	696.091	696.091
interest (i)	186.610	279.915	373.220
income - d - i	509.481	416.176	322.871
tax (t)	254.740	208.088	161.435
income - d-i-t	254.740	208.088	161.435
Payback time, years	7.32	8.96	11.5

Table 6.4

REFERENCE FOR FOREIGN EXCHANGE MOVEMENTS
(expressed in equivalents of 1000 Tsh/y)

	Alt.1	Alt.2
A. Savings from import substitution	1,425.061	1,671.414
B. Foreign exchange component of direct production cost	619.429	767.049
C. Capital service on foreign capital component of TIFI:		
interest payments	4.000	9.700
depreciation	27.500	65.700
D. Net foreign exchange saving (NFES)	774.132	842.449
E. Incremental NFES		68.517

- 2 -

Qualifications Chemist/Market Analyst/Economist or Agronomist with experience in chemical marketing forecasting and financial evaluation. Experience in the field of chemicals such as pesticides, fertilizers etc.

Language English

Background information The Government of Tanzania, in its aim to reconstruct and develop the agricultural sector on a priority basis, has secured a soft loan from the Italian Government to establish a pesticide manufacturing/formulation plant at Mbshi. The plant shall produce 3000 tons/year copper oxychloride, needed for the protection of coffee crops and 6500 tons/year various pesticide formulations. Tecnimont, a reputable Italian engineering and construction firm has been selected as contractor for the implementation of the project on a semi-turnkey basis.

The basic civil works design shall also be supplied by Tecnimont. NCI wishes to obtain advice and a critical evaluation of the quality of design and supplies offered as well as the progress made by the contractor in the implementation of the project.

UNIDO has already provided assistance in streamlining technical aspects given by the Italian sub-contractor, Tecnimont and also assistance in the required modifications to the basic civil design of the plant. Based on this assistance it has been recommended that rephrasing of the plant schedule and also more detailed market analysis are needed before starting the construction of the plant. UNIDO under the present project will provide necessary technical assistance to the project authorities for their negotiations with the Italian sub-contractor, Tecnimont.

attachment 7.2

Abstracts of the highlights of pertinent UNIDO
reports 7.2.1 through 7.2.5

- 7.2.1 Title "Technical report, engineering, construction and commissioning of chemical plants", DP/ID/SER.A/819 of 10 march 1987, expert on mission K. Szabo
period covered april 1986 through january 1987, includes ref. 1st coordination meeting, Milan, 22-25 sept. 1986
- 7.2.2 Title "Technical report, engineering, construction and commissioning of chemical plants", DP/ID/SER.A/819/Add 1 of 11 nov. 1987, "Revised financial analysis of project" expert on mission K. Szabo
update of financial analysis by TISCO (1984), after the inflation mid 1986
- 7.2.3 Title "Technical report, construction of chemical plants DP/ID/SER.A/916 of 29 oct. 1987, expert on mission Rajinder N. Juneja
commenting on civil engineering aspects, recommendations on the subject
- 7.2.4 Title "Technical report, engineering, construction and commissioning of chemical plants" DP/ID/SER.A/923 of 12 nov. 1987, expert on mission K. Szabo
second coordination meeting 8 to 9 april 1987
meeting milan 28 august through 11 sept. 1987
- 7.2.5 Title "Technical report, up-dating of market survey undated, not yet officially released
expert on mission K. Szabo
market data, and third coordination meeting 11 to 12 nov, '87 and preparatory meeting to this, 10 nov. 1987

MINUTES OF THE MEETING HELD BETWEEN
UNIDO AND TECNIMONT ON 22.2.1988

attach't 7.3

Those present:

Mr. B. Sugavanam	UNIDO, Vienna
Mr. F. Sager	UNIDO, Vienna
Mr. G. Jandolo	Tecnimont, Italy
Mr. M. E. Massara	Tecnimont, Italy

Under SI/URT/84/801 and SI/URT/86/875, UNIDO provided technical advisory services to the National Chemical Industries (NCI), Dar-es-Salaam which is in the process of establishing a pesticide complex at Moshi, near Arusha. The plant is established under a soft loan agreement between the Governments of Tanzania and Italy. When completed the plant will produce:

Copper Oxychloride (50%)	3,000 tons
Wettable Powder	3,000 tons
Liquid Herbicides	2,000 tons
Granular	1,500 tons

Construction of the plant was sub-contracted to Tecnimont, Italy

UNIDO's role was to give advice on the process technology know-how, interpretation of civil and engineering design of the plant, the training needs, quality of products and the effluent treatment.

UNIDO's expert visited the sub-contractor's premises and suggested a number of modifications to the process technology, training, testing of raw materials and effluent treatment.

All these points were discussed in a meeting held between Tecnimont and NCI on 11-12 Nov.1987 in Tanzania. UNIDO expert also participated in the meeting. Based on the above meeting, Tecnimont wanted to have a discussion with UNIDO in Vienna to discuss their views about the various modifications suggested and they were also worried about the recent events regarding the progress of the project. This meeting was arranged on 22.2.1988.

Proceedings of the Meeting

Mr. Sugavanam explained UNIDO's involvement in the project mainly as an Advisor on technical matters and not in any capacity to interfere with the sub-contractual agreement between Tecnimont and NCI.

Mr. Jandolo of Tecnimont wanted to know the reason for UNIDO's study for a phased approach for the pesticide complex and that Tecnimont was very much concerned about the last meeting they had with NCI in Tanzania and hence have not yet signed the minutes of that meeting.

They were informed that the phased approach was mainly due to the fact that the pesticide complex was too big for NCI to manage and also due to the copper oxychloride technology being not operational in Italy. Moreover for the large commitment by NCI in foreign and local currency they expected the best technology available in Italy. Tecnimont was also assured that UNIDO's intention was to bring about a better understanding between themselves and NCI for a smooth implementation of the pesticide plant under the bilateral arrangement.

Agreement was reached in principle on the following areas:

1. As Tecnimont has already committed time and money for designing the full plant complex, phased approach will be more expensive and will cause delays.
2. However, Tecnimont will provide the estimated cost factor for the copper oxychloride plant for UNIDO's assessment.
3. Tecnimont will give the proven and operating technology for copper oxychloride.
4. Wherever possible internationally accepted specifications (e.g. FAO specifications) will be used for product quality so that pesticide residues are acceptable on export crops.
5. Tecnimont will carry out raw materials testing and require 300 kg of each raw material pre-processed before sending.
6. Effluent control will be reviewed and suitably modified. NCI should consider providing better quality water. Additional cost will be assessed by Tecnimont.
7. Training will be provided at Caffraro plant, Baslini and Sariaf (for granular formulation) or any other suitable plants.
8. Next meeting with NCI/TCH to be first week of April 1988.

Tecnimont, as contractor, will inform officially and directly his client NCI about details.

cc: Ms. Tcheknavorian
Mr. Youssef
Mr. Kikuchi, SIDFA, Dar-es-Salaam
Mr. G. Jandolo, Tecnimont, Italy
Mr. M.E. Massara, Tecnimont, Italy

04/03 19.56 *

Attachment 7.4

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qu teleint

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milano, 4/3/1988 tx308/ccimp

subject: pesticides plant - mcshi

with reference to your tlx dtd 3/2/88 we send our evaluation of the incidence of copper oxychloride plant on the whole project as defined in the contract signed december 84:

- 1) cost of buildings: civil works will be carried out by the client. the civil works related to copp. ox.chl plant are about 40% of total civil works.
- 2) cost of k.h. and training: 35% of the price indicated in point 15.2.1 of the contract
- 3) engineering documents : 55% of the price indicated in point 15.2.2 of the contract
- 4) equipment cost (including spare parts) : 60% of the prices indicated in point 15.2.4, 15.2.5 of the contract
- 5) erection and supervision : 50% of the prices indicated in point 15.2.6, 15.2.7
- 6) number of staff : in italian conditions: 32 people to run the plants and 10 people for general services

please note that 15% of the prices indicated in points 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5, 15.2.6 of the contract has been already paid by the client as down payment while the remaining amount has been converted from usd into e.c.u (rate: 1 usd = 1.3355 ecu) as per amendment n. 3 to the contract.

v. alliev

rsc

best regards.