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In-plant Group Training Programme in the Field of Electric Welding
INT/86/U07

In-plant Group Training Programme in the Field of Electric Welding
INT/87/U03

In-plant Group Training Programme for Engineers
in the Field of Metalworking Industry
INT/87/U06

In-plant Group Training Programme for Engineers
in the Field of Mineral Fertilizer Production
INT/87/U07

Report of the evaluation mission*

Prepared in co-operation with the Government of the
Union of Soviet Socialist Republics,
the United Nations Development Programme and the
United Nations Industrial Development Organization

United Nations Industrial Development Organization

Vienna

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ABBREVIATIONS

CAD/CAM	Computer Aided Design/Manufacture
GKES*	Gosudarstvenni Komitet SSSR Po Vneshnim Ekonomicheskim Sviziam (USSR State Committee for External Economic Relations)
HTO	Host Training Organization
PER/GT	Project Evaluation Report/Group Training
SEMAF	Société générale égyptienne de matériel de chemins de fer
SIDFA	Senior Industrial Development Field Adviser
TANESCO	Tanzania Electricity Supply Company
JPO	Junior Professional Officer
SPO	Senior Programme Officer (local staff, UNDP)
VDU	Visual Display Unit

* During the mission's visit to Sudan it was announced that GKES and the USSR Ministry of Foreign Trade have been amalgamated under the title of USSR Ministry of External Economic Relations. This report uses the well-known abbreviations GKES.

I. SUMMARY OF IN-DEPTH EVALUATION

Bring-up date
January 1989

**PART A TO BE COMPLETED BY THE EVALUATION MISSION LEADER
PARTS B AND D BY UNDP/RR/PPR, PART C BY UNDP/KX.AG.EQ.**

Date of evaluation
January 1988

PART A

Project No. and Title: INT/86/U07 - In-plant Group Training Programme in the Field of Electric Welding

Executing Agency: UNIDO

Govt Imp. Agency: USSR State Committee for Foreign Economic Relations (GKES)

UNDP budget: US\$ 39,952

Govt budget: Rbl. 124,165 and Rbl. 70,000 (in kind)

Duration: 15 weeks (20 participants)

Date: September - December 1986

Project No. and Title: INT/87/U03 - In-plant Group Training Programme in the Field of Electric Welding

Executing Agency: UNIDO

Govt Imp. Agency: USSR State Committee for Foreign Economic Relations (GKES)

UNDP budget: US\$ 48,294

Govt budget: Rbl. 124,165 and Rbl. 70,000 (in kind)

Duration: 15 weeks (20 participants)

Date: September - December 1987

Project No. and Title: INT/87/U06 - In-plant Group Training Programme for Engineers in the Field of Metalworking Industry

Executing Agency: UNIDO

Govt Imp. Agency: USSR State Committee for Foreign Economic Relations (GKES)

UNDP budget: US\$ 34,834

Govt budget: Rbl. 104,150 and Rbl. 63,000 (in kind)

Duration: 17 weeks (15 participants)

Date: September - December 1987

Project No. and Title: INT/87/U07 - In-plant Group Training Programme for Engineers in the Field of Mineral Fertilizer Production

Executing Agency: UNIDO

Govt Imp. Agency: USSR State Committee for Foreign Economic Relations (GKES)

UNDP budget: US\$ 42,629

Govt budget: Rbl. 85,950 and Rbl. 48,000 (in kind)

Duration: 17 weeks (15 participants)

Date: July - October 1987

SUMMARY OF IN-DEPTH EVALUATION cont'd

I. Summary of objectives and outputs of the projects

1. Development objectives

"Improving the electric welding methods and techniques/the level of metalworking industries/the level of mineral fertilizer production...and in particular development of human resources through training..."

The 1987 welding programme objective is extended to read "...development of human resources through training in the field of electric welding and its relation with other operations such as maintenance, repair, quality production, etc."

2. Immediate objectives

(Welding) "To upgrade the skills of 20 participants...and to provide them with theoretical and practical training in the field of welding".

(Others) "To train 15 participants and to provide them with updated knowledge and practical experience in the field of metalworking industry/mineral fertilizer production and thus to assist them in performing their duties more efficiently and solving their problems in their daily work."

3. Outputs

(Welding) "... high level personnel...will have knowledge and skills upgraded in order to better apply appropriate welding."

(Others) "15 trained participants will return to their home countries with the upgraded knowledge and experience."

(All) "They will be provided with the reference/training material..."

(All) "The training is expected to allow them to introduce modern...methods/techniques..."

(All) "It is expected that some of the participants will subsequently train their colleagues/run training courses...to diffuse the acquired knowledge."

II. Purpose of the evaluation mission (Summary of Terms of Reference)

1. The terms of reference required the evaluation to be focussed on the welding programmes held in autumn 1986 and autumn 1987. A brief and much more informal evaluation of the metalworking and mineral fertilizer programmes was to be undertaken.
2. The evaluation was to endeavour to establish whether (a) the problem that the training programmes were designed to solve was clear and the approach used to solve it was sound and (b) the programmes were soundly conceived and designed as development projects with properly related and verifiable objectives, outputs, activities and inputs.

cont'd

SUMMARY OF IN-DEPTH EVALUATION cont'd

Part A.II cont'd

3. In particular the evaluation was to seek to ascertain how many past participants are utilizing knowledge and skills learnt during their programmes, what effect their training has had on the units or factories in which they work, what benefits participants gained and whether the training was cost-effective.
4. In considering the implementation of the programmes the evaluation was to examine the following points: course planning; capability of host organizations; quality and appropriateness of courses; quality and appropriateness of trainees; cost-effectiveness of the training; administrative issues; respective roles of UNIDO and the USSR host organizations.
5. The evaluation was to include interviews with past and present participants and with current organizers and instructors. Immediate supervisors of past participants were able to be interviewed. For these purposes the mission was to visit training centers in Moscow and Kiev and as many former participants in Africa as possible within the overall time-limit for the mission of 31 working days.

III. Findings of the evaluation mission

1. Project concept and design

- 1.1 Objectives not adequately stated
- 1.2 Programmes oversubscribed and participants' opinions positive
- 1.3 Immediate objective as stated is an output and should refer to application of knowledge and skills
- 1.4 Objective that participants train colleagues not supported by inputs, nor is there evidence that participants' duties include training

2. Implementation

- 2.1 Planning. Programmes generally well planned within limits imposed by lack of feedback and objective. Some titles need revision. Requirement for training equipment not always fully analyzed.
- 2.2 Capability of host organizations. Technically very high. BTOs show professional interest and commitment to success. Training methods not always appropriate. GKES, as principal host organization, willing to discuss changes and improvements in all areas.
- 2.3 Quality and appropriateness of trainees. As individuals, appropriately qualified. A few on each programme lack adequate English. All participants well motivated. Some of outstanding quality. However, even these may work in circumstances in which they are unable to apply what they learn. Two participants working as civil servants may have better opportunities in this respect. As groups, excessive variations in technical circumstances of workplaces.

cont'd

SUMMARY OF IN-DEPTH EVALUATION cont'd

Part A.III cont'd

- 2.5 Evaluation. End-term evaluations limited by lack of objectives but the procedure is being improved by use of new UNIDO PER/GT. Mid-term evaluations not found useful. Ex-post evaluation to be introduced soon will provide valuable feedback.
- 2.6 Cost-effectiveness cannot be meaningfully estimated.
- 2.7 Administrative issues. A complicated system works smoothly. Some difficulty with late notification of acceptance. Decisions as to whether participants receive winter clothing allowance not always felt to be reasonable. Some doubts about level of cash stipend.
- 2.8 Respective roles of UNIDO and GKES. UNIDO could play a more active role and GKES and host organizations would welcome this.

IV. Recommendations of the evaluation mission

Recommendations 1 to 3

Redefinition of project objectives and outputs (UNIDO)

Recommendation 4

Redesign of training programmes as indicated by redefinition of objectives (UNIDO)

Recommendation 5

Investigation of need for programmes for former participants (UNIDO)

Recommendation 6

Some new titles for existing programmes (UNIDO)

Recommendation 7

Revision of invitations to submit applications (UNIDO)

Recommendation 8

Revision of technical information submitted by applicants and their employers (UNIDO)

Recommendation 9

More stringent language certification (UNIDO)

Recommendation 10

Training methodology and visual-aids seminar for programme directors and staff (Proposal to GKES)

cont'd

SUMMARY OF IN-DEPTH EVALUATION cont'd

Part A.IV cont'd

Recommendation 11

Control of use of English in written training material and by interpreters (Proposal to GKES)

Recommendation 12

Analysis of requirements for training equipment and provision of comprehensive support (UNIDO)

Recommendation 13

Development of evaluation system (UNIDO)

Recommendation 14

Administrative matters (UNIDO)

Recommendation 15

Validation of this report (UNDP)

V. Lessons learned

1. Importance of the feedback link in training systems, which provides information to programme designers concerning the experience of former participants.
2. Importance of project design.

VI. Evaluation team

Mr. Charles Manton, UNDP Consultant, Team Leader
Mr. Yuri Afanasiev, Department of International Economic Organizations (UNO), USSR Ministry of External Economic Relations (formerly GKES)
Mr. Hans H. Heep, Evaluation Officer, Evaluation Staff, Office of the Director-General, UNIDO

PART B

I. Report sent to

SUMMARY OF IN-DEPTH EVALUATION cont'd

II. Comments of UNDP field office

PART C (To be completed by UNDP/EX.Ag.HQ.)

Comments on findings and recommendations of evaluation by UNDP Bureau/Special Fund (Executing agency unit) operationally responsible for project

PART D (To be completed by UNDP/RR or PPR)

Comments on follow-up as of 12 months after the evaluation

II. PROJECT CONCEPT AND DESIGN

A. Context of the projects

1. UNIDO has been running group training programmes in collaboration with the USSR State Committee for External Economic Relations (GKES), which became the USSR Ministry of External Economic Relations in January 1988, since the late 1960s. Programmes are financed from the voluntary Rouble contributions of the USSR to the Industrial Development Fund (IDF). Until UNIDO became a specialized agency some programmes were financed from Rouble funds of the UN Regular Programme made available to UNIDO by the UN Secretariat on an annual basis.
2. After the establishment of the UNDP/USSR Trust Fund in 1982 it was decided at UNIDO's suggestion to provide additional financing to the programmes held in the USSR from the Trust Fund and therefore additional programmes or second annual sessions of previously held programmes were added. Twenty-five per cent of the UNDP/USSR Trust Fund is in convertible currency and the remainder in Roubles.
3. For each of the years 1983 to 1986 one programme was financed from the Trust Fund. For 1987 UNIDO requested and the UNDP/USSR Trust Fund approved four group training programmes to a total USSR Government budget of Rbls. 438,430 and UNDP budget of US\$165,709. They are:
 - (a) In-plant Group Training Programme (IPGTP) for engineers in the field of electric welding, based at the Paton Institute for Electric Welding in Kiev.
 - (b) IPGTP for engineers in the field of metalworking industry, based at Patrice Lumumba People's Friendship University in Moscow.
 - (c) IPGTP for engineers in the field mineral fertilizer production, based at the State Institute for the Nitrogen Industry (GIAP) in Moscow.
 - (d) IPGTP for engineers in the field of iron and steel industries, based at the iron and steel plant in Zaporozhye.

Three of these programmes (not the mineral fertilizer programme) were second sessions, first sessions having been held earlier in the year with IDF finance. Three other programmes were run by UNIDO with IDF finance during 1987.

4. Altogether in 1987 the UN Secretariat, its regional commissions and other bodies of the UN system conducted 42 courses, seminars and group training programmes in the USSR with the collaboration of GKES and financed from the USSR's contributions to the UNDP, IPF and UN Regular Programme. All these 42 programmes were subsidized with funds provided directly by the USSR Government to the host training organizations (the so-called contributions in kind).
5. UNIDO runs some 50 to 60 group training programmes each year in various countries and financed from various sources. The exact number depends on the availability of funds.

6. It can thus be seen that the programmes which are the subject of this evaluation form small parts of much larger activities from the point of view of GKES and that of UNIDO. It should also be noted that since only one or two places on each programme are given to any one developing country, the programmes in numerical terms make a relatively small contribution to its total assistance programme.
7. The role of GKES. As regards programmes in the USSR, GKES acts as coordinator on behalf of the USSR Government. It is generally responsible for organizing programmes and ensuring that they are well run. Programme Directors are however appointed by the host training organizations themselves, and these HTOs administrator programme funds within the budget and according to GKES accounting requirements.
8. Future developments in Moscow. GKES is at present taking the initiative, in consultation with UNIDO, in establishing a new training centre in Moscow specially to provide a permanent location, with its own facilities, for UNIDO group training programmes in the USSR. The centre will have conference rooms, lecture rooms, laboratories, a video and television centre and other facilities required for the normal training process. This centre will be located on two floors of a new block to be built as an extension to the Advanced Training Institute of the Ministry of Grain Products, and will be available to all Moscow-based programmes whether or not they are connected with grain products. It is also tentatively planned to acquire an old building in the same street and convert it to provide board and lodging for participants.

B. Project documents

1. General

- 1.1 Group training programmes, especially when held in a donor country, do not follow the normal pattern of technical co-operation projects, and the normal format and content of project documents are not altogether suitable for them.
- 1.2 However, the mission considers that in the documents under review deficiencies in specifying problems and immediate objectives, if not in development objectives, are crucially important: they lead to a lack of focus in course content and uncertainty as to correct structure and duration. They also lead to excessive variety in participants' training needs (a principal lament of all three programme directors concerned with this evaluation), and it is almost certain that the full technical potential of the host training institutions is not exploited. As reported below a number of participants interviewed by the mission in Africa have no possibility of applying the knowledge and skills acquired in the USSR, nor any immediate prospect of doing so, thus providing a clear illustration of the need for objectives which take account of recipient countries' needs.

2. Background and justification

2.1 Project documents lack adequate statements in the following areas:

- Sub-sector(s) covered by the programme, its key features, characteristics and problems in developing countries.
- The number of previous programmes in the same subject which have already been organized are not indicated. A discussion of past results and changes made to the programme based on past assessments and/or evaluations should be provided.
- The proposed forms of training are discussed under activities. However, they should be explained here.
- Statements of the participant profile for whom the training programme is meant are missing in the Metalworking and Fertilizer project documents. The Welding project document gives a fairly good statement of participant profile; however academic qualifications and the required familiarity with welding technological processes are missing.
- There is no information about the areas and levels of competence the host training organization has. The nature of the organization should be explained as well as the qualifications and experience of staff and training facilities available.
- None of the project documents list the countries which will be invited nor the criteria for selection. The number of participants who have already attended are not provided. The problems the countries are facing which the training will contribute to resolve are not discussed.
- How the group training approach can meet training needs of the selected countries in the particular fields is not discussed. This discussion must include a description of the type of organizations and firms which will benefit from the application of skills and knowledge and how they will benefit.

3. Development objectives

- ### **3.1 The development objective refers to improvements in "level" of industries and techniques, but this level is so general and vague a concept that it does not serve as a good starting point for the elaboration of immediate objectives and the rest of the project documents. It also ignores the fact that knowledge and skills by themselves, without the application of them or the possibility of doing so, do not bring any improvements or benefits. On the other hand, the mission notes that UNIDO has discontinued the requirement for development objectives in their own project documents for international group training programmes on the grounds that it is not possible to draft realistic and verifiable objectives which cover many countries simultaneously.**

3.2 The development objective (and the outputs) in the project documents refer to the intention and expectation that participants will subsequently train their colleagues. As will be described below the mission found no evidence in the course of its field interviews that participants' duties include formal training, or any but the most fragmentary on-the-job training, and in this respect there seems to be little connexion between this objective and the possibility of attaining it. Even if training is found to be an important activity for participants in countries not visited by the mission (i.e. almost all of those concerned), it is more of an output than a development objective.

4. Immediate objectives

4.1 All three objective statements are incorrectly stated confusing objectives with activities and outputs and no attempt has been made to provide quantitative and qualitative indicators of change which will be brought about through application of new skills and knowledge.

The project objective statements should have described the change expected at their place or work through the application by the trainees of the skills and knowledge acquired during the training programme after their return to their home country.

4.2 Group Training Programme for Engineers in the Field of Metalworking

"To train 15 participants and provide them with updated knowledge and practical experience in the field of metalworking and thus assist them in performing their duties more efficiently and solving their problems in their daily work."

Comments

To train 15 participants is an activity. The specification of exactly what knowledge and practical experience they are to gain should be in the Project Output section. The statement concerning "more efficiently and solving their problems" is too vague. More specification is required.

4.3 Group Training Programme for Engineers in the Field of Mineral Fertilizer Production

"To train 15 participants and to provide them with updated knowledge and practical experience in the field of mineral fertilizer production and thus to assist them in performing their duties more efficiently and solving their problems in their daily work".

Comments

The same comments provided under the metalworking immediate objective apply here.

4.4 Group Training Programme in the Field of Electric Welding

"The immediate objective of the project is to upgrade the skills of 20 participants from developing countries and to provide them with theoretical and practical training in the field of welding".

Comments

To upgrade 20 participants is an activity, so is the provision of theoretical and practical training. To say that they will be trained in welding is far too broad and therefore meaningless.

5. Outputs

Mineral Fertilizer Production/Metalworking/Welding

Note: All three programmes have the same output statement.

"A total of 15 trained participants from developing countries of Africa, Asia and the Pacific, the Middle East and Latin America will return to their home countries with the upgraded professional knowledge and experience. They will be provided with the reference material for an easy reference and use in their future work. The training is expected to allow them to introduce modern methods in their firms and companies. It is also expected that some of them will return to diffuse acquired knowledge."

Comments

This statement does not tell us about the type and level of participants nor does it specify us what precisely they will be able to perform or carry out upon their return. The introduction of modern techniques is too vague. The training subjects are not indicated nor are the skills and knowledge to be acquired. No clear information is provided about the places of work where these skills will be applied.

The provision of reference materials are project inputs.

That the participants will be able to run courses for their colleagues is not supported in terms of project activities and inputs which could create such a capability.

6. Beneficiaries

In group training projects the participants gain directly in that they acquire new knowledge and skills. When these are applied at their places of work their organizations benefit and can therefore be designated beneficiaries of the project.

The beneficiaries of a group training project should be identified in the project objective statement. A statement describing how the beneficiaries will benefit should be part of the project objective statement.

7. Work plan

The work plan given in project documents, covering a year and ending with the programme itself, is the fruit of long years' experience in UNIDO. The mission only notes that no provision is made for evaluation after the programme..

III. PROJECT IMPLEMENTATION

A. Activities

1. Identification of UNDP programmes. The UNDP/USSR Trust Fund is replenished in the November preceding the year in which funds are to be disbursed and it is then decided which programmes out of the full list of UNIDO group training programmes in the USSR are to be proposed for finance as UNDP projects (and which will be financed by the Industrial Development Fund). This decision is taken by GKES taking into account requests for Trust Fund financing from other UN agencies. At the same time GKES indicates the number of participants which can be accepted on each programme within the resources of the Trust Fund and the capacity of the training institutions. The UNDP subsequently appraises the project documents submitted by UNIDO and takes the final decision concerning the expenditure from the Trust Fund. UNIDO starts preparations for proposed UNDP programmes before project documents are approved but stops short at committing major expenditure.

2. Programme planning
 - 2.1 Each programme financed from the Trust Fund is based on the previous one. Programme directors make minor modifications in response to previous participants' end-of-programme comments and to evaluation reports sent from UNIDO (although the mission was informed that these reports do not always reach them). The metalworking programme is also guided by the recommendations of a Meeting of Experts held in Vienna in 1985. Some changes are made on directors' own initiative, after consultation with UNIDO if project expenditure is involved. Such proposals may include the acquisition of equipment which may in turn affect the content of programmes. (The purchase of two personal computers for the metalworking programme is a case in point.) The system works smoothly and the actual day-to-day organization of the programmes is undertaken with attention to detail and efficiency. Directors' reports on recent changes in their programmes are contained in the Appendix of this report.

 - 2.2 As soon as participants arrive for training programme directors have to start making further adjustments needed to meet individual interests and training needs. A compromise between these individual needs and the group nature of the programme is always necessary but participants reported that lecturers and programme staff took great pains to make adjustments and arrange individual consultations or private study whenever possible. Fuller advance information about participants might make it possible to modify programmes before they start, but it is not certain that the results of the present system could be much improved, if at all. Definition of project and training objectives ought to reduce the requirement for individual attention, although it will never be eliminated.

- 2.3 Theory vs. practice. There is persistent disagreement, especially amongst participants, as to whether the programmes contain too much theory and too little practice or vice versa. In the case of the welding programme the director reports that 'the theoretical course was reduced from 190 to 145 hours and the practical training at laboratories was increased from 115 to 165 hours'. He also informed the mission that this change reversed a decision taken some years previously. In the mission's opinion, this question deserves close attention but in rather different terms. Firstly, a distinction can be drawn between theoretical lectures of a scientific nature ("Structural transformations in welding" might be an example) and lectures dealing with practical matters (e.g., "Procedures and equipment for electron-beam welding"). It is not hard to see that the research and development engineer or the teacher is more likely to be interested in the background theory than the maintenance engineer who is constantly searching for immediate and practical solutions. Secondly, in terms of methodology even the most theoretical lectures can be made easier to absorb if they are followed by some practical activity, which can as well be a paper exercise as workshop practice. Conversely, as pointed out by a participant, workshop demonstrations and practice could well be directly preceded by lectures on background principles, much shorter than classroom lectures but still quite substantial. Once again revised project and training objectives will contribute to a more satisfactory solution.
- 2.4 Programme titles. The programmes, being based in educational or training institutions, are not "in-plant". Use of this phrase creates a false impression that practical experience, perhaps as manual operators, forms a large part of each programme. In fact, no on-the-job skill training is undertaken. Even the use of the word "welding" may contribute to this mistaken emphasis. The subject of the present "welding" programme is really welding design or welding engineering and in the mission's view this should be made clear in the title. If revised project objectives lead to revised training objectives and programme content a completely new programme title may be required.
3. Training methodology
- 3.1 The mission noted a high level of passive methodology: lectures, films, study visits, demonstrations. A certain amount of practical work is done in laboratory or workshop sessions in the metalworking and welding programmes. Participants in the welding programme have to make a presentation to the group and a panel of lecturers on a technical subject at the end of the programme; those in the metalworking programme work on two design projects over a period of weeks. Participants in the mineral fertilizer programme write reports on the series of study visits which form the last part of the programme.
- 3.2 Lectures are densely packed with information, excessively so in the opinion of some participants, with little or no interaction to maintain interest and confirm understanding. Although speakers may take questions at the end of their lectures they do not generally set exercises and as the programmes are at present arranged there seems to be no time for them. The director of the mineral fertilizer programme held that the subjects dealt with in lectures did not in any case lend themselves to subsequent exercises. Lecturers use blackboards and not

overhead projectors, flip-charts or other aids. This talk-and-chalk technique is common in universities and other tertiary educational institutions throughout the world, but is not the most effective for training. The mission was informed that participative and interactive methods are not usually practised in the education and training systems of the Soviet Union. It is however encouraging to read in the metalworking programme director's report that one of the long-term modifications being made is "introduction of the new principles of the composition of lectures directed to the extension of the active dialogue...".

- 3.3 The project document for the 1987 welding programme states that "in order to consolidate the knowledge gained during lectures and laboratory practicals, seminar sessions on the most important topics will be held during which optimum solutions to problems of mutual interest will be sought through discussions." The mission notes that the programme includes three major sessions devoted to case studies.
- 3.4 Laboratory (or workshop) sessions are popular with participants in the metalworking and welding programmes. (They would not be appropriate for the mineral fertilizer programme.) Participants have brief opportunities to operate machines of various kinds and to make various tests. Not all participants felt that these sessions were prolonged or detailed enough or that they contained sufficient actual practice for each member of the group. It did not appear that notes had to be written up or reports made after these practicals. The mission did not have time to look into this question in detail, but tentatively suggests that the purpose and structure of these sessions might be re-examined.
- 3.5 About 15 factory visits are included in the welding and metalworking programmes, mostly grouped into study tours in other cities in the Soviet Union. Participants enjoy the change of scene and the study visits in general terms, and many state that they have acquired useful information from at least one visit. However as is very often the case with group study visits anywhere individuals find it hard to spend long enough examining the equipment or process which interests them alone, and the usual comments were made that visits were too short. On occasions not everybody can hear the explanations; or perhaps the tour of the works is made during a break when machinery is not working. All the same there is no doubt that factory visits have great and positive impact, and it can only be beneficial for participants to be shown large industrial enterprises. The mission thinks that more precise and definite technical benefits could be extracted from study visits if participants were required to report details of information gained or otherwise use the visit as a contribution to some group or individual project.

In the case of the mineral fertilizer programme the pattern is different. For the second half of the programme participants are divided into two groups and each group visits two large fertilizer complexes in different cities. Participants study five processes in different units of the complex, and as noted above are required to write reports on them. The problem arises that some participants have highly specific interests in only one or two processes and would greatly prefer to devote a much higher proportion of that study-tour to the units concerned.

- 3.6 Individual attention. As mentioned above under 'Planning' individual consultations are arranged for participants who come to the programmes with specific technical problems or interests, and private study in class hours is sometimes allowed. This practice is particularly important because it provides the participants in question with immediately applicable information, but the implication is that the value of the group programme is corresponding diminished.
4. Training technology
- 4.1 As noted above the most common classroom aids except for chalkboards, namely overhead projectors and flip-charts, are not in use. The mission feels that material prepared in advance for this equipment, in English with Russian prompts for lecturers' use, would not only be beneficial as direct learning aids, but would also facilitate accurate interpretation.
- 4.2 Some training equipment is being provided by UNIDO making use of convertible project funds and if correctly used it will contribute greatly to participants' absorption of information and hence to the effectiveness of the programmes. Details of the equipment provided and costs charged to the programmes under review are in Appendix 2. The mission notes that the equipment is intended for use by the HTOs for the series of programmes which they run, and may indeed not be delivered or brought into use for the programme to which it is charged.
- 4.3 Regarding the equipment for the welding programmes (lists 1 and 4 in Appendix 2) the mission did not see the 1986 equipment in use and understands that the 1987 equipment had not been delivered by the end of the programme. It is not clear to the mission what this equipment will be used for.
- 4.4.1 The two Sanyo personal computers provided to the metalworking programme had been delivered but had not been incorporated into the programme's work at the time of the mission's visit. It appears that the output signal from the computers will produce graphics required for CAD (the intended use of the system) only on colour VDUs, not on the monochrome VDU actually provided. Furthermore, only minimal instructions come with the computers, and software is deficient, with the result that the Assistant Director is having to spend many hours writing his own programmes. The mission was given to understand that once in full operation the computers would be placed in the computer room of the Patrice Lumumba University Engineering Department rather than retained in the UNIDO programme's own classroom, but was unable to judge whether this was desirable.
- 4.4.2 Although more a question of content than methodology the mission takes this opportunity to question whether the purpose or the effect of introducing computers has been properly thought out. How many hours must be devoted even to the most basic understanding of computer operation, let alone skill in CAD/CAM? and how is a major development of this sort to be squared with the recommendations of the 1985 Meeting of Experts? How many participants are likely to see computers in use at the places of work?

4.5 The mission was shown the video camera, recorder and back-projection screen in use at the premises of the mineral fertilizer programme, but was not clear what use would be made of them. The State Institute for the Nitrogen Industry make a large number of training video-tapes for its own use, but it appears that the technical specification for these tapes (SECAM D) is not compatible with the UNIDO-supplied equipment. The mission did not have the time or expertise to look into the question in detail and can only express the hope that the equipment, especially the video camera, will be fruitfully used.

5. Cultural programme. A series of excursions and visits is arranged for each programme on a scale which is not, to the mission's knowledge, matched in other countries. It was greatly appreciated by all the participants to whom the mission spoke except one who would have preferred greater emphasis on engineering and less on museums, ballet, and so on. The UNDP/USSR Trust Fund does not fund this programme; it is financed directly by the additional funds made available by the USSR government (the contribution in kind).

6. Language questions

6.1 The four programmes under review were run in English. Interpretation was necessary for all sessions and was consecutive. (The welding programme's classroom is not equipped for the simultaneous interpretation mentioned in the project document, nor were the other two programmes' classrooms.) The procedure is slow and laborious when lecturers write words (rather than draw pictures) on the blackboard, or even formulae in which letters have to be changed from Cyrillic to Latin script.

6.2 The mission was greatly impressed by interpreters' command of general English. As to their technical English one or two participants, including one who speaks fluent Russian, said that welding programme interpreters made technical errors, and/or had difficulty with participants' questions. This point was made often enough to suggest to the mission that verification might be advisable. Even though some interpreters have worked on successive programmes for many years it is quite possible, as a participant pointed out, that some particular error can be repeated from programme to programme. The mission was also informed that for administrative reasons the metalworking programme has had difficulty in retaining interpreters, but the situation has eased now that two programmes are run each year and continuous employment can be offered.

6.3 Written material for the welding and metalworking programmes has been translated into English and the stock is being added to. The mission noted, however, that some of the translations are not clear and idiomatic, and need validation and revision. Some participants in the welding programme observed that some texts could not always be readily understood, and stated that some formulae were incorrectly given.

6.4 On the subject of participants' own command of English, all three programme directors said that in each programme one or two participants had an inadequate command of English. It was rightly felt that they could not benefit much from the programmes, let alone contribute to them, and that difficulties with discussing even minor administrative matters were a source of aggravation and delay. The directors were all anxious for such participants not to be accepted. In interviews in Africa the mission noted that some former participants had difficulty with English, and others confirmed that one or two members of their

groups were weak in English. On the question of certification, the mission was informed that in Egypt this is done by the Ministry of Foreign Affairs. Sudanese applicants are not required to submit language certificates because their university or polytechnic courses were given in English. (Older participants may not have used English for a good number of years since graduation.) Tanzanian applicants are similarly not required to submit certificates, and English is indeed much more widely used in day-to-day life and work than in the other two countries visited by the mission.

- 6.5 Russian lessons are given to participants during the first month of their programmes, and are generally found enjoyable and indispensable. The mission learnt that lessons were given by interpreters, but that they had no instruction in teaching Russian as a foreign language.

7. Administrative matters

- 7.1 Very few problems were raised and it is clear to the mission that programme administration, both in Vienna and in the Soviet Union, is well practiced and efficient.
- 7.2 During their programmes participants are lodged in comfortable hotels and transport to their places of work is provided. Hotel bills are partially subsidised by the USSR contribution in kind. The mission heard one or two grumbles about food and service, the common complaint of long-stay visitors in hotels throughout the world, and future participants will no doubt welcome the special residence which is tentatively planned for them in Moscow, especially if cooking facilities are provided.
- 7.3 Late notification of acceptance for programmes, with consequently insufficient time for obtaining passports, visas and air tickets, is one source of difficulty, but the mission is not able to say where the delay occurs. Some participants also found that they had to undertake long and complicated journeys in order to connect with an Aeroflot flight. (Aeroflot is used to the greatest possible extent.) In the homeward direction the shipping of large purchases is a long process which involved loss of programme hours and interpreters' time on a scale which preoccupies programme directors.
- 7.4 Very few health problems were reported. However, visits to doctors, dentists, oculists etc. similarly absorb programme hours and interpreters' time, and programme directors have to resist pressure from participants who wish to take the probably unrepeatable chance to make use of the excellent facilities for treatment of non-urgent conditions.
- 7.5 Expenditure on winter clothing up to 100 roubles is reimbursed to participants from tropical countries. The question as to whether a participant comes from a qualifying country for this purpose is decided by UNIDO, and the mission was informed that negative decisions cause annoyance out of all proportion to the amount involved.
- 7.6 Some participants interviewed in Africa maintained that the cash stipend received in the USSR was insufficient for more than basic meals and necessities. This complaint was not general and the mission has no doubt that the USSR authorities keep an eye on this question, especially when participants stay and normally eat in relatively expensive hotels.

8. Recruitment and selection of participants

- 8.1 The UNIDO Training Branch officer responsible for the group training programme in question selects the countries to which the invitations for participant nominations are to be sent. When asked how these countries are selected - based on what criteria -, he responded that the development level of countries is considered, and the likelihood that participants will be found who have adequate English proficiency and finally whether in the past countries responded to the invitations. The mission was told that the technical officers of UNIDO also help select countries.
- 8.2 Based on statistics available to the mission during 1987, Metalworking I, 28 countries were invited and 11 did not respond. The number of nominations received were 31 and 15 were accepted. Of interest is that UNIDO has gradually reduced the number of countries invited from 61 in 1983, 54 in 1984, 34 in 1986 and 28 in 1987.
- 8.3 In preparation for the 1987 Electric Welding I, 36 countries were invited and 20 did not respond. The nominations received totalled 45 and 15 were accepted.
- 8.4 For the 1986 Mineral Fertilizer Programme, 38 countries were invited and 19 countries did not respond. Of the 41 nominations received 15 were selected.
- 8.5 Welding consistently receives the most nominations, averaging 75 during recent years, except for 1987 Welding I when only 45 nominations were received, since only 36 countries were invited, as against 45 to 67 countries in earlier years.
- 8.6 For the 1986 Fertilizer Programme only 41 nominations were received from the previous average of 50. Six countries less were invited that year than the year before.
- 8.7 In summary, for whatever reason, UNIDO has tended to reduce the number of countries they invited. Although the number of nomination applications swing widely, the reduction of the pool from which the organizers can select participants must surely affect the quality of participants chosen.
- 8.8 Meaningful criteria for the selection of countries and of participants need to be urgently established. This can only be done once the project design of these programmes are improved as discussed and recommended in other sections of this report.
- 8.9 UNIDO, in each case, sends the invitations through the local UNDP Resident Representative for forwarding to government. If there is a UNIDO representation, i.e., SIDFA and/or JPO, they assist in ensuring that the invitations are forwarded to the government officials responsible for processing and deciding which organizations/firms could benefit from the programmes offered. In a larger office, there may be a separate UNDP section especially designated for processing of fellowships and group training participants.
- 8.10 In Egypt the Ministry of Industry and Mineral Wealth writes to all companies which potentially have staff who could benefit from the programmes offered. The companies in turn identify engineers whom they think could benefit, ask them whether they are interested and, if affirmative, send nomination forms to the Ministry of Industry who forwards the forms to UNDP.

- 8.11 In Sudan, there is a National Training Administration under the Council of Ministers who is responsible for processing the participant selection process. The invitations and nominations must go through this office. Nominations are all cleared by the Council of Ministers.
- 8.12 Tanzania uses the Ministry of Labour and Manpower Development for the coordination of the selection process. To varying degrees the UNDP/UNIDO representatives send copies of invitations to the government departments which have a more direct interest in the type of training offered by UNIDO.
- 8.13 Little, if any, filtering of nominations is done by the UNDP/UNIDO offices. In all instances, ways and means to effect more rigorous checking of language proficiency needs to be initiated since in almost every course one or two have language problems which greatly reduce the benefits which could have been derived.
- 8.14 Once the nominations are received in UNIDO the Training Branch officer responsible for the programme, a UNIDO officer from the appropriate technical branch and a representative from the HTO and/or GKES make the final selection. Due to financial constraints the HTO is often not able to send a representative to UNIDO. In such cases, UNIDO should send all the nomination materials to the HTO so that they can make the final selection based on a short list prepared by UNIDO. During the last couple of years this has not been done, and according to the HTOs, quite a few of the participants who have attended the course should not have been selected, i.e., three metallurgists in a recent metalworking programme.
- 8.15 A more precise specification of participant qualifications, present duties, responsibilities, technologies used and training needs could greatly reduce occurrences of this nature. This would also help the local U.N. representatives to publicize the programmes amongst organizations and firms who could maximally benefit.

B. Monitoring and evaluation

1. Evaluation by UNIDO - the present system

1.1 End of programme evaluations

To assess a programme at the reaction and training levels UNIDO relies on the responses of participants to a structured questionnaire given to them at the end of a course. The questions are grouped into several categories:

Pre-programme information
Concept and organization of programme

- Contents
- Level
- Breadth
- Duration
- Size of group
- Composition of group

- Character of programme:
practical versus theoretical
- Adequacy of Russian language studies
- Training material
- Professional Exchange with Instructors
- Ability to Influence Programme Content

Relevance and applicability of the programme:

- Relevance to conditions in home country
- Should programme be repeated, where
- Extent to which participant benefitted professionally
- Whether new qualifications will be recognized in home country
- The extent to which an opportunity will be given to pass on acquired knowledge
- How transfer will be made, will there be difficulties

The participant reaction evaluation exercise is conducted by a Training Branch officer who travels to the host training organization especially for this exercise.

The UNIDO officer briefs the participants on the purpose of the evaluation, distributes the questionnaires and later meets with the participants for group discussions and individual interviews. Furthermore, separate discussions are held with the programme directors concerning the success and problems experienced during the programme. Upon return an End-term Evaluation Mission report is prepared, which is to be distributed to all concerned. Suggestions for improving the organization, content, structure, nature, methodologies, etc., of programme should be made in this report. (There are at present no written instructions as to its form or content.)

1.2 Mid-term evaluations

"Mid-term evaluations" are conducted by the technical branch officers of UNIDO, who have expertise in the subject matter of the training programme. These missions are in fact technical assessments of the programme which according to the Training Branch are to identify and initiate corrective action if necessary regarding the technical content of the course, whereas the end-term evaluation by the Training Branch members is to evaluate the complete programme (mainly from a training methodology and technique point of view).

1.3 UNIDO's Internal Evaluation System - Project Evaluation Report (PER/GT)

Early in 1987 UNIDO introduced a new approach to the evaluation of group training programmes. The system in a single report elicits the active involvement of the host training organization and UNIDO's training and technical branches, and has a built-in feed-back mechanism.

The system has the following additional features:

- It leads the HTO through a structured analysis of its training programme without the need for them to provide an extensive narrative;

- It is especially designed to utilize the results of the participant reaction evaluation;
- It ensures that the HTO will receive UNIDO's assessment of the programme and its reaction to the host training organization's assessment; and
- It requires UNIDO to summarize follow-up actions required to improve programmes. This clarifies follow-up responsibility and helps ensure subsequent monitoring of proposed remedial actions.

Through the introduction of the PER/GT system the USSR authorities have decided that the administrative reports normally prepared by the HTOs are no longer required. It is suggested, however, that a short note from the HTO by programme directors summarizing the course activities should be attached to the completed PER/GT.

It should be noted that the PER/GT requests the HTO to state the project objective and training outputs and asks it to report on training results actually achieved in terms of changes in knowledge, skills and attitudes and how these changes were determined. An assessment of potential utilization of new knowledge and skills is also required. The design of existing project documents will need to be improved to facilitate meaningful assessments of project achievements.

2. Developments in UNIDO evaluation

2.1 Ex-post evaluations

The institutionalization of an ex-post evaluation of USSR group training programmes by means of mailed questionnaires to participants six months to one year after they have returned to their place of work has just been agreed upon by UNIDO's management. A draft model questionnaire has already been developed. The purpose of this exercise is to elicit information on the application of newly acquired skills and knowledge to provide feed-back to all concerned on the relevance and effectiveness of the programmes.

The questionnaire will also request information on further training needs.

2.2 In-depth evaluations

In the future, the need for in-depth evaluations will be determined by the results of the PER/GT and the ex-post questionnaire evaluation exercises.

UNIDO intends to send copies of the participant reaction exercise summary reports, PER/GT and ex-post evaluation reports to UNDP for those programmes financed by them.

IV. PROJECT RESULTS

A. Outputs

1. Demand

1.1 All programmes are oversubscribed, especially the Welding programmes under review, for which UNIDO received more than three applications for each place. In the countries visited by the mission some pre-selection by government authorities also takes place. Lists of applicants also show that some come from the same organizations as previous participants; "repeat orders" presumably indicate customer satisfaction. On the other hand, some countries do not respond to invitations at all, and it appears that a good number of applicants would be rejected as unsuitable even if places were available. The numbers involved are in any case very small in relation to presumed world demand and since participants do not necessarily come from technical assistance projects which imply a degree of concentration of improvement, the effect of each programme is extremely dispersed. If only 15 or 20 places on any one programme are available to the whole developing world it is most important to attract participants who can make the most of them. Once again lack of definition of programme objectives adversely affects the programmes, by attracting applications from too wide a range of candidates.

2. Numbers trained

2.2 The numbers of participants in the four programmes under review were:

Welding 1986 (20 places)	19
Welding 1987 (20 places)	17
Metalworking 1987 (15 places)	15
Mineral fertilizer 1987 (15 places)	13

Six places out of the 70 available (8.6%) were thus unused, and the mission has noted vacant places on other programmes as well. Vacancies arise when accepted candidates drop out too late for candidates from the reserve list to take up their places. The mission enquired whether UNIDO might take the risk of overbooking in order to ensure that all places were filled but was informed by GKES that programme financial arrangements do not allow the numbers of participants to exceed the places available in any circumstances. Moreover, excess participants can not be financed from the savings derived from empty places on earlier programmes.

3. Participants' acquisition of skills and knowledge

3.1 None of the programmes ends with an objective assessment of participants' acquisition of skills and knowledge. The end-of-programme questionnaire does not ask the direct question whether the participants acquired new skills or knowledge. However, all participants interviewed by the mission asserted that their programmes contained material new to them. Some said that a great deal of information was new; others that new material came up here and there in what was in effect a refresher

course. Some of the impact was undoubtedly affective, for example, two participants told the mission how impressed they had been by the serious attitude to work in the Soviet Union during their visits to plants and factories. Given the lack of training objectives and the very small number of interviews, the mission has not attempted to quantify or tabulate these results but reiterates that in general participants' opinions are positive.

4. Training/reference material

- 4.1 Participants are given printed or duplicated material in various forms in each programme. This material is produced by HTOs and is continuously developed and revised. Participants in the welding programmes receive some 30 booklets in blue covers on different kinds of welding and some 20 of these are supplemented by booklets in red covers containing instructions for laboratory work. Former participants interviewed in Africa told the mission that they used some of these booklets for reference, but many deal with techniques and machines which they never use. Participants in the metalworking programme are given about twelve quite substantial books specially produced by the HTO. Material issued in the mineral fertilizer programme consists of lecture notes in English and some texts which although in Russian are considered by the HTO to contain useful formulae for reference purposes. None of the material produced for any of the three programmes is in a form which enables it to be readily used as the basis of a training syllabus or as support for training sessions and it is not intended for such purposes.

5. Training of colleagues

- 5.1 None of the participants interviewed by the mission had any formal training duties. However, a good number of them had met with their colleagues upon return from their programmes to explain some of the information obtained and to show them printed material, and two participants had undertaken some on-the-job training. Once again the mission must stress the small size of the sample interviewed, but it seems reasonable to conclude that training cannot be considered a major project output. In the mission's opinion this output would have been greater if participants had been given even a brief introduction to training management and methods while in the USSR, and thus motivated and encouraged to create training opportunities in their enterprises; but this hypothesis would have to be tested by UNIDO in the course of redefinition of project objectives and in the light of experience in countries other than those visited by the mission.

B. Immediate objectives

1. Application of skills and knowledge and the effect on units or factories in which participants work

- 1.1 As stated above the mission considers that the immediate objective of the projects should have been expressed in terms of the application, not the acquisition, of skills and knowledge and in terms of the effect on participants' places of work.

- 1.2 During the mission's interviews participants were encouraged to give examples, even modest ones, of applications. Many of them, especially in Egypt, were able to do so. Some examples:

Welding

- . Able to repair CO₂ machines; learned how to tackle moisture problems in submerged-arc welding machines;
- . Able to do some training; solved problem of welded seam testing; learned how to correct defects;
- . Improved surfacing operations;
- . Learned surfacing which will be applied soon.

Metalworking

- . Improved foundry practice; uses new techniques in electro-plating;
- . Improved selection of cutting materials; improved feeding procedures during cutting operations; adapted wall charts seen in Moscow;
- . Better planning and procedure to design and produce machined parts.

Examples were also given by one outstanding Sudanese participant in a welding course, i.e., solution of important cracking problem in steam pipes; use of jigs to repair impeller pumps; changed methods for cutting tools; demonstration of improved manual welding methods.

As mentioned elsewhere two Tanzanian participants interviewed by the mission are civil servants and may have considerable opportunity to exploit knowledge acquired in the USSR in their duties of overseeing the rehabilitation of one fertilizer plant and the construction of another.

- 1.3 On the other hand, the mission noticed in quite a number of interviews that former participants felt frustrated after returning home and doing the same job as before, handling the same types of rather traditional equipment which does not require the advanced knowledge and experience of the programmes in USSR. After visiting some fairly rudimentary workshops the mission appreciates these feelings. Even when modern welding techniques are in use (high frequency induction welding of mild steel pipes in Tanzania; automatic spiral welding of large diameter pipes in Egypt) it is not clear that participants' welding programmes in Kiev have had any influence on their introduction or operation.
- 1.4 The small sample of interviews and visits cannot lead to reliable conclusions but the mission feels that much closer attention must be paid to participants' present and future responsibilities and to their employers' development plans.
- 1.5 Meanwhile, the mission took the opportunity afforded by meetings with senior government officials and senior managers in corporations in the three countries visited to express concern over appropriate use of former participants increased technical potential and experience gained during training in the USSR. The mission emphasized that since much money was spent and effort applied by UNDP, UNIDO and the host country to organizing the training programmes adequate efforts should be made to

give former trainees a real opportunity to apply their new skills, experience and methods in day-to-day work. For example, they might be required to organize and conduct training programmes as a possible channel the transfer of new technology. Former participants should also be encouraged to assert themselves and to create their own opportunities for change.

C. Development objective

1. A general development objective might concern an increase in technological self-sufficiency in developing countries, or to increased production of under-utilized plant, or to increased productivity. In comparison to the grand scale of such objectives the effect of the training of very small numbers in any one country must be negligible. This is not to say that the training in the case of individual participants or factories cannot be very valuable indeed if effectively applied; it is rather to cast doubt on the possibility of formulating development objectives capable of measurable attainment for international group training programmes.

V. FINDINGS

1. Project concept and design

- 1.1 As indicated earlier in this report, the mission finds that the objectives of the projects, which are similar for all three, are not adequately stated. No particular problem in recipient countries or industries is described. The general, and most probably correct, assumption is made under Background and Justification that improved knowledge and skills are desirable but in the mission's view this does not provide the focus which would help to ensure that the very limited number of places on each course are used as effectively as possible.
- 1.2 Part of the justification in the project document for each programme is that previous programmes have always been oversubscribed, and the mission takes the point. The mission also takes note of the positive end-of-programme opinions of participants and the equally enthusiastic responses during most interviews with former participants during the mission. Gratifying and encouraging as these opinions are, it must be recognized that the numbers are very small and highly dispersed. The possibility remains that the programmes could be a good deal more effective and no less well received if more precisely targeted.
- 1.3 The immediate objective of the projects as at present stated, which the mission considers to be an output, namely the training of a given number of participants, is verifiable in that the participants trained can be counted. The mission recognizes that a true immediate objective, which ought to involve the application of knowledge and skills acquired during the programme, will be much harder to verify since this application takes place, if at all, in dispersed locations and no quantitative measure of results comes readily to mind. All the same the mission takes the view that the objectives ought to relate to changes in participants' working practices in their own countries, not simply to changes in the participants themselves. Verifiable objectives may be easier to define in terms of the solution of specific problems, and verification will be greatly assisted when the evaluation system regularly includes participants' experience after the programme.
- 1.4 The development objective and the outputs in the project documents refer to the intention and expectation that participants will subsequently train their colleagues. The mission notes that the programmes in the USSR contains no guidance or instruction on the subject of training management or methods, and the printed material issued to participants, although valuable for reference, is not in a form which can be directly used for training course planning or as support for training sessions. On the other hand the mission found no evidence, in the course of its field interviews, that participants' duties include formal training. In this respect, connexions between the stated objective and the inputs, and the possibility of attaining it, are weak.

2. Implementation

2.1 Planning

- 2.1.1 Each of the programmes under review is one of a series, and planning is largely a matter of routine. Adjustments to programme content are made in the light of feedback information available, which has not hitherto included information from previous participants. This report is the first which has brought back any such information.
- 2.1.2 The present lack of programme and training objectives is necessarily reflected in the programme content, structure and duration.
- 2.1.3 Within these limitations the mission finds that the programmes are planned and organized very carefully and thoroughly.
- 2.1.4 As indicated earlier, the mission considers that programme titles need revision. For example, the word "in-plant" is not correctly used in any of the three cases under review, and in the case of the welding programme the very use of the word "welding" may misleadingly indicate that the programme is for craftsmen.
- 2.1.5 One particular aspect of the metalworking programme stands out, namely the acquisition of two personal computers for basic instruction in computer-aided design. The mission is not convinced that the requirement for such instruction can have been properly established (in terms of participants' opportunity to use CAD), nor that the very considerable time required for instruction in the use of computers, and the consequent effect on other parts of the programme, have been fully appreciated.
- 2.1.6 Not only in regard to computers, but also in regard to other equipment such as the video equipment acquired for the mineral fertilizer programme the mission doubts that a fully informed analysis has been made of the professional requirement for such equipment nor of the subsequent requirements for user training, consumable materials, software (not only computer programmes), system development, maintenance and repair. The mission also notes that some relatively simple learning aids such as overhead projectors are not in use. The Programme Directors probably need further support from UNIDO in this area. (See also paragraph 2.2. in the following finding on the capability of host organizations.)

2.2 Capability of host organizations

- 2.2.1 The institutions which support the Electric Welding programme (Paton Institute and Kiev Polytechnic) are of the highest technical standing and quality. The Metalworking and Mineral Fertilizer programmes are also soundly backed, respectively by the Engineering Faculty of the Patrice Lumumba Peoples' Friendship University and by the State Institute for the Nitrogen Industry. The mission was impressed by the professional interest and commitment to the success of the programmes shown by department heads in these institutions, as well as by course directors and staff. The mission was particularly pleased to hear proposals for improvement and development from Academician Vladimir K. Lebedev, Deputy Director of the Paton Institute and from Professor Vjacheslav Butkovski, Director of the Advanced Training Institute, Ministry of Grain Products. (Concerning this latter institution see "Context", para 8. page 4.).

2.2.2 The mission considers that the training methods used in the programmes, although appropriate in academic, educational establishments, and although within the traditions of the Soviet Union, are not the most effective for short training programmes. HTO programme directors would benefit from a comprehensive and systematic discussion of appropriate training methods in support of their efforts to introduce such methods into their programmes. The mission notes that the Training Branch of UNIDO has discussed the question of training methods with GKES as the HTOs on previous occasions.

2.2.3 Concerning the principal host organization, GKES itself, the mission has no reason to question its capability and is greatly encouraged by its willingness to discuss all changes and improvements which lie within its authority and resources. (See also Findings 2.8, Respective Roles of UNIDO and the USSR Host Organization, page 33).

2.3 Quality and appropriateness of programmes

2.3.1 The training programmes are an expression of the capability of HTOs and of the planning which are the subjects of the two previous sections. The mission has nothing useful to add by way of comment on programme quality except perhaps to emphasize that the HTOs, the programme directors and their staffs are firmly committed to providing the best possible service to participants. Programme directors themselves feel that they could improve this service, particularly if participants were more homogeneous. This point is covered more fully in the next section.

2.3.2 It can be said that the programmes are appropriate to the training needs of the participants as far as the compromises necessitated by any group training programme allow. Trouble is taken by programme directors to meet individual needs and interests by means of consultations and private study arrangements within and outside programme hours.

2.3.3 The programmes themselves cannot overcome the lack of objectives which the mission regards as so important, nor the lack of opportunity to apply the subject matter which some participants suffer. Reduction or elimination of these deficiencies will enable the programmes to become not only appropriate internally but also more effective in the context of a complete training system which includes application of subject matter and a strong feedback link.

2.4 Quality and appropriateness of the trainees

2.4.1 As individuals

2.4.1.1 All the participants interviewed by the mission had appropriate formal qualifications. Working experience in each individual case contributed to the basic suitability of all participants for training in the general area of the programmes which they attended.

2.4.1.2 All three course directors complained that one or two participants had an inadequate command of English, contrary to the language certificates which accompany nomination forms, and that this difficulty occurred regularly. In conversation with participants in the USSR, the mission noted that some of them indeed did not seem at ease in English, even at the end of their programmes. In fact, few demands are placed on participants to express themselves either in spoken or written English, and as noted above checks on comprehension are not generally made. English is the medium of conversation within each group, but in many cases more than one participant has some language other than English as mother tongue and thus escapes peer pressure to practice English. During the mission's interviews in Egypt and Sudan some participants had difficulty in understanding and speaking English. This might well be because their command of the language was rusty but it must be recognised that it might have been just as rusty at least in the early stages of their programmes. Some participants had graduated from English-medium universities but may not have used the English language for many years thereafter.

2.4.1.3 The mission was impressed by the professional enthusiasm of almost all those interviewed and by their apparent confidence and independence of mind. Three or four participants, a relatively high proportion of the total seen by the mission, were outstandingly energetic, positive and lucid: their strong personalities will have enabled them to extract the greatest amount of useful information during their programmes in the USSR, and will enable them to make imaginative use of this information even in unfavourable circumstances.

2.4.1.4 The unfavourable circumstances to which some participants return to work must raise doubts as to their appropriateness for the programmes. For example, the mission met some participants who have only oxy-acetylene and manual arc welding at their disposal, and have no foreseeable prospect of acquiring, or even needing, more advanced techniques. Despite their personal qualities it is doubtful whether any of the few places on a programme at the Paton Institute should go to such engineers. On the other hand, a prior decision not to accept such people would have excluded one of the outstanding participants mentioned above, and that would have been a great loss to the individual, to the programme and probably to the factory in which he works. The mission does not see an easy way out of this dilemma. It will not arise if candidates are drawn from factories or other places of work which are undergoing development and re-equipment programmes even though there is only a slim chance that there will be a good technical match between the programme in USSR and the re-equipment programme.

2.4.1.5 The mission met two former participants in the mineral fertilizer programme who are civil servants. One is generally responsible for the state-owned fertilizer industry; the other is desk officer (in another ministry) for a new fertilizer project. Both have appropriate technical qualifications. Although the programme in USSR sets out to cater for engineers working in factories the mission felt that, paradoxically enough, these two participants have more opportunity than any others interviewed to apply the knowledge acquired during the mineral fertilizer programme.

2.4.1.6 The mission also met two participants who had previously graduated in the Soviet Union after six years' study there. For them, the UNIDO programmes were refresher courses containing little new material. They had already visited some, if not all, of the factories in the UNIDO programme. The mission formed the view that these participants' places would better have been allocated to applicants with more to learn in the Soviet Union.

2.4.2 As groups

2.4.2.1 Participants in each programme come from about ten countries, some with much larger economies than others. There are great differences in the kinds of technology in use, in research and training facilities, and hence in participants' experience and opportunities. Participants themselves generally welcome the experience of interaction with many nationalities and benefit from it (only objecting when one language group is dominant) but the mission doubts that large variations in technical matters are beneficial to the programme.

2.4.2.2 The Director of the welding programme informed the mission that only six out of 17 participants in the 1987 programme had experience in welding, and nine out of 19 in the 1986 programme. The remainder, although engineers, had no welding experience. There are differences of knowledge and ability within each group, and the mission noted enormous differences in the quality of technical reports presented by participants at the end of the 1987 course. It was also pointed out that two participants in each programme worked in educational institutions, not in production like the others, and thus added a further dimension to the training requirements. This variety creates major problems for group work, and it raises the important question whether the programme is in fact intended for experienced welding engineers, or for mechanical engineers who need to add welding, in various forms, to the range of techniques which they are capable of specifying for production, maintenance or repair. This question leads back to the need to define course objectives more precisely. It is in this connexion that Academician Lebedev, Deputy Director of the Paton Institute, suggested that programmes at different levels and with different objectives should be offered.

2.4.2.3 Similarly the Director of the metalworking programme stated that a large proportion of participants in the second 1987 programme were "specialists in the maintenance and repair of metallurgical equipment" (i.e., steel-making equipment), and major modifications had to be made to the programme to cater for them.

2.4.2.4 The Director of the mineral fertilizer programme mentioned the variety of levels of knowledge and experience of his participants and raised the question of running separate programmes at different levels. He did not, however, think that nitrogen fertilizer specialists should be separated from phosphate fertilizer specialists despite differences in technology (a point which has been raised in UNIDO evaluation reports) since all participants are sooner or later going to have to produce compound fertilizers containing both types of chemical.

2.4.3 UNIDO Guidance

2.4.3.1 The mission considers that UNIDO might give more precise guidance to UNDP field offices on the kind of applicants sought or on enterprises or institutions which might benefit from the programme concerned. More precise programme and training objectives will make such guidance less necessary but it could still constitute valuable support to field offices.

2.5 Evaluation

2.5.1 End-term evaluations

2.5.1.1 In the past end-term evaluations did not attempt to measure programme results against the new knowledge and skills which the participants were expected to learn by the end of the programmes since they were never defined.

2.5.1.2 The group training evaluation report (PER/GT) specifically asks the HTO to describe training results (outputs) actually achieved in terms of changes in knowledge, skills and attitudes. The response to this question still remains unsatisfactory since the group training project documents still do not fully specify what the participants will be learning and what they will be able to do by the end of the programme.

2.5.1.3 A clear assessment of the potential utilization of training results are also not satisfactorily provided in the end-term evaluation reports nor in the PER/GT. This is also caused by inadequate group training project design at the objective level of the training programmes. The project objective should fully specify the changes expected at the participants workplace though the application of newly required skills and knowledge. UNIDO will soon issue group training project document formulation guidelines which should improve the existing project designs and subsequent evaluations.

2.5.1.4 The HTOs are not yet adequately participating in the end-term evaluation process. Their identification with UNIDO conducted evaluations are therefore less than optimal.

2.5.1.5 In fact, the HTOs do not always receive a copy of the UNIDO end-term evaluation reports nor the results of the participant reaction exercise. This, of course, renders the evaluations to be of no use to the HTOs.

2.5.1.6 The quality of the end-term evaluation reports are varied. The fact that there are no standards nor guidelines for their preparation increases the likelihood of quality differences.

2.5.2 Mid-term evaluations

2.5.2.1 As an "evaluation" exercise and as an exercise expected to change the programme, if required, while it is being conducted, mid-term evaluations are considered by the host training organizations, several UNIDO technical officers and by the evaluation team to be of only marginal use.

2.5.2.2 The training programme cannot be substantially changed during its implementation and the HTO staff time required to service such missions detracts staff from this training activities. Moreover, the programme can only be fully evaluated near its completion.

2.5.2.3 Of course, end-programme and ex-post evaluations may from time to time indicate that assessment of technical content and presentation methods be undertaken during the conduct of such programmes, especially if major changes to the programme are being planned in reaction to changed training needs of the participant countries.

2.5.3 Group Training Project Evaluation Reports (PER/GT)

2.5.3.1 The introduction and recent institutionalization of this system is considered an improvement over existing end-term evaluation practices. It requires the active involvement of both the HTO and UNIDO. At UNIDO, both Training Branch and the applicable technical branch are expected to provide their own assessment of the programme. The Training Branch also summarizes the issues raised in the PER/GT and follow-up required. The assessment of all concerned are contained in one report.

2.5.3.2 The UNIDO Evaluation staff in the Office of the Director-General administers and monitors the functioning of the system.

2.5.3.3 For the completed PER/GT to provide all the information required the present group training project designs will need to be considerably improved. Again clear statements of project objectives and training outputs need to be formulated before the participants in the PER/GT exercise are able to provide their assessment of project performance.

2.5.4 Ex-post evaluations

2.5.4.1 In the past, UNIDO had no mechanism to get systematic feedback on the actual application of the newly acquired skills and knowledge of the participants at their place of work nor on the impact the utilization of training results had at their place of work.

2.5.4.2 The ultimate success and utility of any training programme depends on the extent to which training results are actually applied and on the impact of any such application. UNIDO should, as is already planned, send questionnaires to participants, 6 to 12 months after they have completed their course to elicit this information. The alternative of frequent missions to the many participant countries would be far too costly in terms of time and money.

2.5.4.3 During this evaluation mission the Government officials and factory management expressed interest in the ex-post questionnaire approach since they themselves would like this information. They also expressed willingness to help ensure that the ex-participants complete and return the questionnaires to UNIDO.

2.5.5 In-depth evaluations

2.5.5.1 This is the first in-depth evaluation of a sample of USSR/UNIDO group training programmes whether funded by the UNIDO or UNDP. The need for future in-depth evaluations should be based on the justifications provided by PER/GT and ex-post evaluation exercise.

2.6 Cost effectiveness of the training

It is not possible to make meaningful, let alone useful, comments about cost-effectiveness. Even if objectives and outputs were clearly stated there would still be no way of putting a value on the increased skills and knowledge gained by participants nor on the benefit derived by their employers from their application. Furthermore there has been no opportunity to compare the programmes under review with similar programmes, if any, in other countries.

2.7 Administrative issues

2.7.1 The procedures for preparing and executing the programmes under review are voluminous and complicated. They involve large numbers of countries and organizations as well as individual candidates and participants. The mission recognizes that the system works very smoothly, and is pleased to report that participants came up with very few negative observations.

2.7.2 The chief source of difficulty is late notification to some candidates of their acceptance. The mission has not identified reasons for delay with any certainty. It is understood that although selection takes place in good time, project documents sometimes receive approval too late for timely issue of acceptance letters. (These letters and the simultaneous orders for air tickets constitute major expenditure commitments and must await project approval.) On the other hand, all former participants interviewed in Tanzania had received notification in good time. Despite the small numbers involved this may indicate that it is governmental or other procedures in some recipient countries which lie at the root of the problem.

2.7.3 The winter clothing allowance is restricted to participants from "tropical" countries, to the dissatisfaction of those from other countries where winter clothing is not necessary.

2.7.4 Some participants regard the cash stipend as too low but the complaint is not general. The USSR authorities keep a close watch on participants' basic needs and the mission does not feel it necessary to make a recommendation on this point.

2.8 Respective roles of UNIDO and the USSR Host Organization (GKES)

2.8.1 As implied in some of the foregoing paragraphs the mission considers that UNIDO should take a more active role in programme specification and in the development of training methodology. The mission also understands that GKES and the training organizations would welcome it if UNIDO gave more precise and detailed expression to professional proposals and requirements and if this is correct the mission hopes that GKES will in its turn make its wishes and expectations known to UNIDO.

2.8.2 The mission notes that at the functional level the system appears to work smoothly and in a friendly spirit. A great deal of meticulously careful work goes into the preparation and execution of each programme and it must be remembered that, as previously noted, the four programmes sponsored by UNDP are only a small fraction of the much larger number of programmes sponsored by UNIDO and run by GKES.

VI. RECOMMENDATIONS

Recommendation 1 - that UNIDO should for UNDP-financed group training programmes define the development objective in project documents in terms of how the application of training results will contribute to the solution of a development problem. Such a problem might be related to a lack of the knowledge and skill necessary for the independent and successful specification, introduction, operation or maintenance of new equipment in particular industries or for processes (such as welding) used in various industries. UNIDO should also discuss with UNDP the desirability of aligning project document requirements for UNDP-financed programmes with those for UNIDO-financed programmes and in particular discontinuing the requirement for a development objective in UNDP project documents related to international group training programmes.

Recommendation 2 - that UNIDO should define the immediate objective of the projects in terms of the change expected at their places of work through the application by the participants of the knowledge and skills acquired during the group training programmes.

Recommendation 3 - that UNIDO should define project outputs in terms of (1) a specific number of participants; (2) the qualifications, experience and type of position held by participants; and (3) training objectives in the form of what the participants will be able to do at the end of the programme.

The mission foresees that a considerable variety of trainee specification, training need and training objective will be found in each main technical area.

Training needs and training objectives should deal not only with technical knowledge and skills but also with any requirement for participants to present proposals for innovation and/or to organize and conduct training programmes themselves.

Recommendation 4 - that UNIDO in collaboration with GKES and HTOs examines the structure, content and duration of programmes in the USSR in the light of the results of Recommendation 1 to 3 and redevelops the programmes as necessary.

The mission has noted that the training organizations have indicated their willingness to run courses at different levels, and this possibility should be given consideration.

A modular structure should also be considered. As examples a welding module at the Paton Institute in Kiev might be introduced into a general metalworking programme; metalworking of appropriate kinds might be included in industry-specific programmes; the mineral fertilizer programme might, after a general period for all participants, offer two or three options for different types of fertilizer.

Appropriate modules on training management and methods and on presentation skills should be considered for addition to all programmes.

The development of a central training institution in Moscow will facilitate a modular structure and should be exploited to the full for this purpose as well as for the other professional and administrative benefits it will bring. In this connexion, UNIDO should play a more positive role in their talks with the USSR authorities.

Recommendation 5 - that UNIDO in consultation with GKES should investigate the possible requirement for programmes in the USSR for some former participants, especially in the welding programmes. Such programmes would probably be shorter and more specialized than the present programmes and might include presentation and training methods. It is recognized that programmes for former participants would reduce the number of new participants unless compensating adjustments were made.

Recommendation 6 - that UNIDO should devise programme titles which succinctly and accurately indicate subjects and target participants. In particular the phrase "in-plant" should not be used when inappropriate.

Recommendation 7 - that UNIDO, when sending out invitations to submit applications, should:

- 7.1 stress that nominating authorities should only submit the names of candidates who will be able to make use of the knowledge and skills offered by the programme either immediately upon return home or within the context of a development or re-equipment plan which is to be executed in the near future;
- 7.2 describe HTOs and emphasize their standing (especially in the case of the Paton Institute);
- 7.3 when appropriate indicate specific enterprises or institutions which might be able to nominate candidates likely to benefit from the programme (seeking advice from such organizations as the Paton Institute in order to supplement information already available within UNIDO);
- 7.4 emphasize that costs are not charged to a country's IPF;
- 7.5 consider a more attractive and distinctive format for the programme descriptions and supplementary information at present given in the "aide-mémoire".

Recommendation 8 - that UNIDO, in collaboration with GKES and HTOs, should revise the technical questionnaire which accompanies nomination forms about applicants' technical background, current responsibilities, and expectations from the programme. Applicants should also be given the opportunity to describe a technical problem for which they will seek a solution during the programme.

A short questionnaire for employers to indicate applicants' training needs and their (the employers') intentions for the use of applicants' abilities after the programme should be devised and validated and, if proved useful, introduced into general use for UNDP/USSR programmes by UNIDO.

The requirement for participants to write a "Country Paper" should be discontinued. Details about their enterprises especially with respect to size and technologies should be included in one or other of the above questionnaires. Information about the status of particular industries in countries concerned should be provided to HTOs by UNIDO, and GKES and HTOs should make their wishes known in this respect.

Successful candidates should, instead of a Country Paper, be invited to bring full details with them to the programme of a real technical problem for discussion in class as a problem-solving exercise and/or discussion with staff of the HTO with the intention that practical and effective solutions should be found.

Recommendation 9 - that UNIDO should insist on more stringent and objective language certification. The mission recognizes that effective testing which may result in the rejection of otherwise excellent candidates raises all kinds of difficulty in recipient countries. Testing must be undertaken at a level and by an organization which command the respect of applicants. UNIDO should discuss the role of UNDP field offices with UNDP headquarters in this connexion. UNIDO should also consider the use of official tests and certificates offered by organizations from English-speaking countries when available even though fees will be charged. The possibility should be considered of postponing acceptance until a candidate has improved his English.

Recommendation 10 - that GKES might wish, in collaboration with UNIDO, to organize a seminar for programme directors and other senior staff on the subject of training methodology with emphasis on UNIDO participants' activities and interaction with teaching staff. A visual-aids workshop should be incorporated in the seminar. The seminar should require its own participants to be active and interactive. International inputs should be brought in as appropriate. It will be important for GKES to monitor the results of the seminar as to application of techniques discussed.

Recommendation 11 - that GKES might ensure that documents and training material issued to participants by Programme Directors are in correct and straightforward English, and that existing material is revised before reprinting; also from time to time verify interpreters' command of the technical vocabulary required for their programmes both in Russian and English.

Recommendation 12 - that UNIDO should systematically analyze the professional requirement for training equipment in each programme and if a need is identified for items which should be imported into the USSR and paid for from Project Funds, UNIDO should ensure that (1) systems are internally integrated; (2) equipment is compatible with USSR equipment to the greatest extent possible; (3) the provision of supporting software, consumables, written instructions, user training, and system development and maintenance is planned and budgeted for.

Recommendation 13 - that UNIDO pursues the development of its evaluation system and in particular:

13.1 discontinues mid-term evaluation missions unless their purposes and results can be clearly enough defined to justify the worktime and costs entailed;

13.2 in respect of end-of-programme evaluations:

13.2.1 establishes a standard report form which refers (inter alia) to programme objectives and outputs and the extent to which they have been achieved;

13.2.2 harmonizes the participant questionnaire as far as possible with the GT/PER and asks participants to assess the extent to which they have attained the training objectives and expect to attain the programme objective (by employing the knowledge and skills acquired);

13.2.3 invites and encourages the participation of the HTOs;

13.3 collates reports on programmes in various locations, periods and subjects; and makes definite decisions on recommendations;

13.4 begins the issue of follow-up questionnaires to former participants as soon as possible and pursues any other available means (e.g., through missions and field offices) to establish a strong and continuous feed-back link in the training system;

13.5 discusses with UNDP headquarters the development of effective follow-up procedures making use of in-country representation;

13.6 invites the assistance of recipient Governments in following-up former participants and ensuring that they are given opportunities to apply knowledge and skills acquired in the Soviet Union to the greatest extent possible.

Recommendation 14 - that, concerning administrative matters, UNIDO:

14.1 ensures that applicants receive notification of acceptance or rejection at least six weeks before programme starting date, and identifies, eliminates or circumvents persistent causes of delay even if these are outside UNIDO's immediate control;

14.2 for winter programmes allocates the winter clothing allowance to all participants regardless of country of origin.

Recommendation 15 - that UNDP validates this report, which is to a significant extent based on the mission's interviews with a very small number of participants and on other discussions in only three recipient countries in one continent, by obtaining comments from other countries amongst the 40 or 50 which have sent participants to group training programmes in the USSR as well as from the three recipient countries visited by the mission.

VII. LESSONS LEARNED

1. In most diagrams illustrating the theory of training systems a feedback link is shown along which information flows from former troubles concerning the applicability of their training. This information is an essential contribution to the planning of future programmes. In practice, the link is neglected in a great many training systems, not only in the system under review, because it is difficult and expensive to establish and maintain. The vivid and important information brought back by the present mission, even from a very limited survey, indicates that attention and resources should be devoted to a strong and continuous feedback link in all training systems. The cost may appear high but the effects will certainly justify it.
2. The importance of clear and correct project design is a recurring lesson learned in evaluations, and the lesson is again reinforced by the experience of these projects.

Annex I

TERMS OF REFERENCE

Evaluation of UNIDO In-Plant Group Training Programmes
Financed Under the USSR/UNDP Trust Fund

I. BACKGROUND

UNIDO has been running in-plant group training programmes in collaboration with the USSR since the late 1960's. Since its creation in 1982, the USSR/UNDP Trust Fund has provided financing for one IPGTP in electric welding. The total value of this programme and other UNIDO USSR/UNDP Trust Fund projects through December 1986 was Roubles 313,683 and \$118,117. For 1987, UNIDO requested, and the USSR/UNDP Trust Fund approved, a total of four in-plant group training programmes totalling Roubles 438,005 and \$168,388. Therefore, it appears timely for UNDP to carry out an evaluation at this time. Since the IPGTP for electric welding is the only one which has been held already under the Trust Fund and will be held again in 1987, it should be the focus of the evaluation. Nevertheless, since all of the courses start in September 1987 and run from 13-17 weeks, the evaluation should provide for the evaluator to visit at least two other courses and make a brief assessment of them for purposes of comparison.

II. PURPOSE OF THE EVALUATION

A. Issues To Be Covered

The evaluation will review the project INT/86/U07 - IPGTP in Electric Welding which took place from 4 September to 12 December 1986 and as well as project INT/87/U03 - IPGTP in Electric Welding, which is ongoing. These two projects will form the focus of the evaluation. At the same time, visits will be paid to two other ongoing IPGTP in the fields of Metalworking (INT/87/U06) and Mineral Fertilizers (INT/87/U07) in order to provide a brief and much more informal evaluation.

A.1. Concept and Design

The evaluation will endeavour to establish whether:

- (a) the problem that the in-plant training programme was designed to solve was clear and the approach used to solve it was sound;
- (b) the objectives and outputs of these projects were stated in terms that are verifiable;
- (c) there was a clearly stated and logical relationship between the objectives, the outputs, the activities and the inputs;
- (d) the objectives were commensurate with the activities foreseen and the time frames of the these projects.

A.2 Implementation

The evaluation will cover the following in detail for the two electric welding courses and to the limited extent possible during brief visits to the other three courses:

- the planning of the course
- the capability of the host organization
- the quality and appropriateness of the course
- the quality and appropriateness of the trainees
- the cost effectiveness of the training
- administrative issues
- the respective roles of UNIDO and the USSR host organization

The evaluation will include interviews with a sample of past and present participants and current organizers and instructors in the in-plant training programmes for Electric Welding, Metalworking and Mineral Fertilizers. The immediate supervisors of past participants will also be interviewed. Those interviewed should be asked questions to assess the following factors:

- (a) Suitability of training to needs of developing countries participating;
- (b) Suitability of the training to their backgrounds and positions at home;
- (c) Opportunity of trainees to apply new knowledge;
- (d) Suitability of manuals, handouts and other teaching materials;
- (e) Relevance of study tours undertaken as part of courses;
- (f) Quality of lectures and experts;
- (g) Course workload;
- (h) Quality of practical course organization, such as travel arrangements and availability of general information about the courses and their settings.
- (i) Cost-effectiveness of this method of training.

The evaluation should seek to ascertain general results of the in-plant training, such as:

1. how many of the past trainees are utilizing skills learnt during their participation in the IPGTP;
2. what effect has their training had on the units, or factories, in which they work; and
3. what benefits have past trainees gained.

III. COMPOSITION OF THE MISSION

The mission will be carried out by a UNDP Consultant in full consultation with UNIDO and GRES.

IV. TIMETABLE AND ITINERARY OF THE MISSION

The mission will be briefed for one day at UNDP Headquarters in New York and for two days at UNIDO Headquarters in Vienna. The Consultant will then proceed to Africa to interview past participants in the programme and their immediate supervisors and others aware of their performance. These visits may be in conjunction with other visits to African countries in order to save funds. The Consultant will report to the GRES Office in Moscow for a one-day briefing and proceed to Kiev where he will participate in one or two days of factory visits and participate in five days of the wind-up theoretical session of the course. Before or after the week in Kiev, he will pay one or two-day visits to two other training programmes which are based in Moscow (Mineral Fertilizers and Metalworking). The mission will have one day each to debrief with GRES in Moscow, UNIDO in Vienna and UNDP in New York. The final report should be submitted within two weeks after the mission's completion. The total duration should not exceed 31 working days including 16 for briefing and visits in the USSR, 10 for visits to African countries and 5 for report writing in Vienna or Geneva. The evaluation will be financed by an additional allocation under the USSR/UNDP Trust Fund project INT/87/U03 - IPGTP for Engineers in the Field of Electric Welding.

V. PREPARATORY WORK BY UNIDO

Prior to the evaluation, UNIDO will supply the specialist with the following:

1. Copies of reports from evaluations carried out on the three programmes over the past five years.

2. Lists of nominees and accepted candidates (with titles) for the three courses over the past five years.

3. An indication of the principal changes introduced in each of the three programmes over the past five years with respect to course content, methodology and course materials.

Annex II

Composition of the Mission

Mr. Charles Manton
UNDP Consultant

Mr. Hans Heep
Evaluation Staff
Director-General's Office
UNIDO

Mr. Yuri Afanasiev
Department of International
Economic Organizations (UNO)
USSR Ministry of External
Economic Relations
(Formerly GKES)

Annex III

Itinerary and Timetable of the Mission

7 - 9 December 1987	UNIDO Vienna	(Messrs. Manton and Heep)
10 - 15 December 1987	Moscow	(All members)
16 - 19 December 1987	Kiev	
8 - 14 January 1988	Cairo	(including two visits to Helwan)
15 -18 January 1988	Khartoum	(including tour to Guneid, Wad Medani and Assalaya)
19 - 23 January 1988	Dar es Salaam	
24 - 27 January 1988	UNDP Geneva	

Annex IV

Persons Consulted

UNIDO Vienna

- Mr. A. A. Vassiliev, Deputy Director-General, Department of Industrial Operations.
- Mrs. I. Lorenzo, Head, Industrial Training Branch, Industrial Institutions and Services Division.
- Mr. O. Gonzalez-Hernandez, Chief, Evaluation Staff, Office of the Director-General.
- Mr. I. Loguinov, Industrial Training Branch, Industrial Institutions and Services Division.
- Mr. M. Delos, Head, Engineering Industries Branch, Industrial Operations Technology Division.
- Mr. Fürkus, Engineering Industries Branch, Industrial Operations Technology Division.

USSR - Moscow

- Mr. V.V. Vlasov, Deputy Chief, Dept. of International Economic Organizations (UNO). GKES.
- Dr. N.N. Trofimov, Dean, Engineering Faculty, Patrice Lumumba People's Friendship University.
- Mr. N.V. Ivliev, Director, Metalworking Programme.
- Mr. M.L. Skomorohov, Assistant Director.
- Mr. A.K. Chernyshov, Director, Mineral Fertilizer Programme.
- Mr. V. Romanchukevich, Assistant Director.
- Prof. V. Butkovski, Director, Advanced Training Institute, Ministry of Grain Products and Director of 3 UNIDO training programmes.
- Participants in metal-working programme (as a group) and individuals.

USSR - Kiev

- Academician V.K. Lebedev, Deputy Director, Paton Institute of Electric Welding.
- Prof. I.R. Patskevich, Head of Welding Department, Kiev, Polytechnic and Director of Welding Training Centre.

Persens Consulted

USSR - Kiev ...

Mr. A.M. Proscurin, Director, Welding Programme

Mr. A.P. Schevchenko, Deputy Director

Participants in welding programme (as a group) and individuals.

(NB: The Mineral Fertilizer programme had ended and the participants had left the Soviet Union before the mission visited their training location in Moscow).

EGYPT

Mr. L. Cappelletti, Resident Representative, UNDP

Mr. Tharwat Sabry, SPO, UNDP

Mrs. Samiha el Bindawi, Fellowship Assistant, UNDP

Dr. Yusef K. Mazhar, First Under-Secretary, Min. of Industry

Mr. Tawakol El-Maghrabi, Chairman, Société générale égyptienne de matériel de chemins de fer (SEMAF) (Participant in UNIDO Iron and Steel programme, Zaporozhye, 1969).

Mr. Maged El-Dalgamoni, Head of Administration, SEMAF.

Mr. Helmy Omar, Chairman, General Organization for Chemical Industries.

Mr. Fouad El Guindy, Technical Director, General Organization for Chemical Industries.

Mr. Esmail Afify, General Manager, El Nasr Steel Pipes and Fittings Co.

Mr. M. Metwally Mohd., Works Director, El Nasr Steel Pipes and Fittings Co.

Mr. Vladislav Yasenev, Counselor for Economic Affairs, USSR Embassy in Egypt.

Mr. Askold V. Dralo, Deputy Counselor for Economic Affairs, USSR Embassy in Egypt.

Persons Consulted

SUDAN

Mr. F. Iqbal, SIDFA, UNDP

Mr. Osman El Amin, Acting Under Secretary, Ministry of Industry.

Mr. Gaafar Hussein, Director-General, Office of Public Industrial Companies, Ministry of Industry.

Mr. Tahir Mohamed Ahmed, Director of Department of U.N. and European International Relations, Ministry of Industry.

Mr. Mohamed Abdel Gadr, Department of U.N. and European International Relations, Ministry of Industry (accompanied mission outside Khartoum).
(Participant in UNIDO programme for Industrial Information Officers and Documentalists, Moscow 1986).

Mr. Fathy Bashier, Director, Sugar Cooperation Training Centre, Sennar.
(Participant in UNIDO Human Resources Development Programme, Moscow 1987)

Mr. Boris Chernyshev, Counselor for Economic Affairs, USSR Embassy in Sudan.

Mr. Pavel Goutsyakov, Senior Expert, Economic Counselor Office, USSR Embassy in Sudan.

TANZANIA

Mr. M. Constable, Acting Resident Representative, UNDP

Mr. T. Kikuchi, SIDFA.

Mr. J. Rasmussen, Programme Officer UNIDO/UNDP.

Mr. W.L. Nyachia, Director, Industrial Investment and Project Implementation, Ministry of Industries and Trade.

Mr. A.B.S. Kilewo, Chairman and Managing Director, National Development Corporation.

Persons Consulted

TANZANIA . . .

Mrs. R.A. Mtui, Acting Director of Manpower Development and Administration, National Development Corporation.

Mr. K.J. Mabuba, Principal Manpower Management Officer, National Development Corporation

Mr. Alexander V. Vodinsky, Head of Soviet Mission for Economic and Technical Cooperation, USSR Embassy in Tanzania.

Mr. Vladimir S. Golomysov, Deputy Head of Soviet Mission for Economic and Technical Cooperation, USSR Embassy in Tanzania.

Annex V

UNITED NATIONS DEVELOPMENT PROGRAMME

Interregional Project

Project Document

Title: In-Plant Group Training Programme in the Field of Electric Welding, UkSSR

Number INT/87/U03/A/89/37 **Duration:** 15 weeks

Primary Function: Direct Training

Sector: Industrial Training **UNDP Class and Code:**
Industrial Development Support Services
0510

Sub Sector: **UNDP Class and Code:** Industry Training

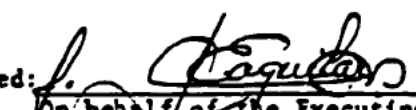
Government Implementing Agency: USSR State Committee for External
Economic Relations (GKES)

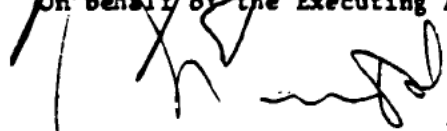
Executing Agency: United Nations Industrial Development
Organization (UNIDO)

Estimated Starting Date: September 1987

Host Government Inputs: Training Facilities (in kind)

UNDP Inputs : a) Dollar requirements- in US \$ 48.294 (incl. overheads
b) from USSR Trust Fund-in Rbls 124.165 (equiv. \$183.948)

Signed:  **Date:** 11/2/87
On behalf of the Executing Agency

 **Date:** 9/3/87
On behalf of UNDP

Part I - Legal Context

This project document shall be the instrument envisaged in the agreement between the Government of the USSR and the United Nations Development Programme concerning the training of professionals and specialists from developing countries in the USSR, financed under the Trust Fund of the United Nations Development Programme. It will be implemented in 1987.

Part II - The Project

A. Development Objective

The project is aimed at improving the electric welding methods and techniques in developing countries and, in particular, development of human resources through training in the field of electric welding and its relation with other operations such as maintenance, repair, quality production, etc.

B. Immediate Objective

The immediate objective of the project is to upgrade the skills of 20 participants from developing countries and to provide them with theoretical and practical training in the field of welding.

C. Special Considerations

The programme provides an opportunity for professional dialogue among the participants and possible co-operation among the developing countries.

The letter of invitation will specifically request Governments to nominate female candidates for the programme in accordance with UNDP's/ UNIDO's concern for the integration of women in economic development. The programme will be primarily financed from the USSR Trust Fund to UNDP. UNDP is interested in the development of a technical training programme such as Electric Welding, to take full advantage of the excellent training facilities in the USSR.

D. Background and Justification

As is well known, Electric Welding is crucial for the success of an enterprise to avoid, to the most extent possible, breakage, stoppage of work, decrease in productive capacity and financial losses. It also has a tremendous saving impact at the enterprise level.

The first UNIDO programme for Engineers in the Field of Electric Welding was held in 1972 in Kiev, UkSSR and was repeated on an annual basis.

The programme was always successful with participants and the number of candidates submitted by developing countries always exceeded several times the number of fellowships available, which is an indication of the great interest for the training in this field.

The proposed training programme is intended for high-level specialists in welding in industrial enterprises and institutions of developing countries. Additionally, the programme will be addressed to the technicians and chief technical and other technical managers responsible for the welding department as well as for the ship building and repairs workshops in developing countries

E. Project Outputs

Twenty high-level technical personnel from developing countries in Latin America, Asia and the Pacific, Africa and the Middle East will have their knowledge and skills upgraded in order to better apply appropriate welding. They will be provided with training material for easy reference and use in their work. The training will allow them to introduce modern electric welding techniques in their firms and companies including energy saving technique. It is expected that some of the participants will subsequently train their colleagues in the knowledge acquired.

F. Project Activities and Modalities of Project Implementation

The project activities are related to the organization, implementation and evaluation of the training programme.

The organization phase covers:

- preparation of training material and training facilities (host authorities, programme management and UNIDO);
- invitation to selected countries to nominate candidates for the programme (the list of countries being discussed with the appropriate section in UNIDO and the host authorities);
- evaluation of candidates nominated by the Government at UNIDO and by the programme management (UNIDO sends nomforms to the programme director);
- selection of participants at the joint selection panel composed of representatives of the programme management, Training Branch and Engineering Industries Branch of UNIDO.

The implementation activities:-

The programme lasts about 15 weeks and consists of three parts: theoretical course, laboratory workshop training and in-plant visits.

The programme will consist of a series of independent lectures and discussions, each covering a specific subject, both in theory and in its practical applications through in-plant studies and direct observations. It will be further designed taking into consideration the general welding and production situation in various industries. Moreover, the theoretical part of the programme will be supplemented by exercises and case studies in the classroom, as well as by visits to selected industries. There will also be time set aside for the discussion of individual problems presented by participants.

Theoretical lectures and laboratory workshop training will be conducted in English and the Welding Training Centre (WTC) coordinated by the Paton Institute for Electric Welding and Kiev Polytechnic Institute.

The WTC laboratories are equipped with modern machinery and instruments necessary for training. All participants will be exposed to basic/advanced concepts such as training methodology, physical and metallurgical aspects of welding, evaluation of welds and their quality control; mechanization and automation of welding processes; economic and organizational aspects of welding production and also such specialized topics as arc welding processes and equipment (gas-shielded welding, submerged and mechanized flux-cored welding); plasma and gas welding and cutting; electroslag welding; resistance welding, solid state welding, electron and laser beam welding, various welding equipment, principles and practices of welding steels, cast iron, non-ferrous metals and alloys, brazing and surfacing; welding consumables, welded structures and steels for their manufacture. Consultations will be arranged at participants' request.

The theoretical course will be supplemented with technical films, slides etc. Each lecture will be followed by a practice period at laboratory workshop where the participants, divided into two sub-groups, will have the opportunity to handle welding equipment and instruments under the guidance of experienced teaching staff.

In order to consolidate the knowledge gained during lectures and laboratory practicals, seminar sessions on the most important topics will be held during which optimum solutions to problems of mutual interest will be sought through discussions. During and after the theoretical course and laboratory training, the participants will be taken on a 5-week tour visiting 15 industrial enterprises in the cities of Kiev, Riga, Leningrad, Zaporozhye and Kharkov. There they will be given an opportunity to familiarize themselves with the application of welding processes and equipment under industrial conditions and acquaint themselves with organizational aspects of welding production.

At the end of the training period, each participant will be requested to write a short technical report which will be discussed and defended during a special evaluation session.

The courses will be delivered in English as much as possible. However, when necessary simultaneous translation will be provided. Consecutive translation will be offered during visits and in lecture rooms where no simultaneous translation facilities are available.

G. Project Inputs

- a) The Government of the USSR has agreed to provide the required training staff and training facilities for the organization and execution of the programme (contribution in kind).
- b) UNDP will finance (from UNDP Trust Fund):
 1. International return travel (homecountry/Moscow/homecountry) and DSA in USSR for 20 participants
 2. administration and interpretation costs;
 3. motor vehicle expenses;
 4. travel within the USSR relating to the programme;
 5. USSR trainers' and instructors' fees;
 6. special-/winter clothing (emergency cases);
 7. miscellaneous expenses;
 8. international travel (Moscow/Vienna/Moscow) and 5 days DSA in Vienna for two USSR programme officials for final programme arrangements and selection of participants;
 9. international travel (Vienna/Moscow/Vienna) and 10 days DSA in Moscow for UNIDO staff members to conduct mid- and end-programme evaluation.
 10. In this Project, a sustained effort should be made towards using modern training techniques, including technological development in the field of technical aids. Therefore the purchase of training equipment such as Ceiling Video Projection System, Video Monitor, Video Camera etc. is envisaged under Budget Line 42-00.
- c) UNIDO will provide:
 1. Basic programme content and staff members from Training and Engineering Branches to conduct mid- and end-programme evaluation;
 2. all necessary arrangements for the recruitment and selection of the participants for the interregional group training programme;
 3. co-ordination, monitoring and evaluation of the whole project.

H. Work Plan

<u>Activity</u>	<u>Responsible</u>	<u>Date</u>
- Final preparation of programme content and side-mémoire.	UNIDO	0-3 weeks
- Mailing letter of invitation and side-mémoire to invited countries.	UNIDO	4th week
- Preparation of programme infrastructure, finalization of programme content, appointment of trainers, preparation of training materials, printing handouts and arranging for hotel reservations for participants.	Host Authorities/ UNIDO	3rd-30th week
- Recruitment of candidates.	UNIDO	16th-31st week
- Selection of candidates and preparation of final list of participants, sending acceptance cables, travel arrangements.	UNIDO/ Host Authorities	31st week
- Starting interregional group training programme.	UNIDO/ Host Authorities	37th week
- Mid-programme evaluation.	UNIDO	44th week
- End-programme evaluation and closure of programme.	UNIDO	52nd week

Part III - Schedules of Monitoring, Evaluation and Reports

A. Tripartite Monitoring Reviews, Technical Reviews

Not applicable.

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.

The monitoring and evaluation are aimed at ascertaining the effective use of the project inputs and the achievement of immediate objectives through the proposed project activities and modalities of implementation.

In addition to the built-in evaluation mechanism, which is conducted during the implementation process through discussions between the training management and the participants, the programme provides for mid- and end-programme evaluations, which are carried out by UNIDO staff members from the Engineering Industries Branch and the Training Branch respectively.

The objective of the mid-term evaluation mission is two-fold. Since it is carried out by a staff member from the Engineering Industries Branch, it provides a basis for additional inputs of a substantive nature. The s/m will brief the participants on the UNIDO projects relating to electric welding technology. He will also advise on the substantive aspects included in the programme.

An end-programme evaluation will be conducted by UNIDO in order to ascertain the participants' reaction through the individual completion of evaluation questionnaire as well as joint discussions with the programme management and participants.

The end-evaluation mission is designed to also analyze the training methodology used and organizational aspects and to make necessary recommendations for future programmes.

A final appraisal session will take place between UNIDO and the host authorities, including the training management.

C. Progress and Terminal Report

A final report, summarizing the activities held at the Interregional Group Training Programme and inclusion of individual participants' reports will be prepared at the end of the training programme by UNIDO staff.

D. Envisaged Follow-up

It is expected that the evaluation and follow-up activities will lead to up-dating future group training programmes in the USSR to better meet the training needs of developing countries.

PROJECT BUDGET ESTIMATE FOR IMPLEMENTATION IN 1987.

Annex I

a) UNDP Contribution (UNDP/USSR Trust Fund)	<u>US \$</u>	<u>Roubles</u>
BL 16-00 UNIDO staff travel and per diem mid-evaluation missions (MET, BIO)		
- travel by AEROFLOT VIE/MOW/KIEV/MOW/VIE		650
- per diem Roubles 100 x 5 days		500
- terminal expenses 48	48	
end-evaluation missions (TRNG. BIO)		
- travel by AEROFLOT VIE/MOW/KIEV/MOW/VIE		650
- per diem Rbl. 100 x 5 days		500
- terminal expenses 48	48	
Sub-total (BL 16-00)	96	2.300
BL 32-00 International travel of 20 participants by AEROFLOT incl. 10 kg excess baggage for the homeward journey only.	11.000 ^{1/}	30.000
Fellowship stipend (20part.xR.30x58 days)		34.800
(20part.xR.25x54 days)		27.000
Administration and Interpretation costs		12.000
Motor vehicle expenses		5.800
Travel within the USSR relating to the programme		2.665
Trainers and Instructors		2.500
Special and winter clothing (emergency cases)		1.900
Miscellaneous expenses		4.000
Sub-total (BL 32-00)	11.000	120.665
BL 42-00 Training equipment	10.000	
BL 51-00 Visit to Vienna of 2 programme officials for final selection of participants		
- travel 2 x Rbl.600		1.200
- per diem 2 x 3 days x \$ 80	480	
Sub-total (all BLs. \$ Equivalent of Rbls.	21.576 183.948	174.165
Total	205.524	
13% Overhead charges	26.718	
Grand Total	232.242	

(exchange rate US \$ = Rbl. 0,675 as of November 1986)

Currency Requirements

(a) Convertible 48.294
 (b) Non-convertible 124.165 (equiv. 183.948)

b) USSR Government Contribution in KIND
 Training facilities and staff. Rbl. 70.000 (equiv. of \$ 103.703)

^{1/} For connection flights with AEROFLOT

UNIDO

US \$

PROJECT BUDGET/REVISION

PROJECT NUMBER	16. TOTAL		17. 1987		18.		19.		20.	
	m/m	\$	m/m	\$	m/m	\$	m/m	\$	m/m	\$
EXPERTS (functional titles required)										
Sub-total-OPAS experts [Ⓟ]										
ADMINISTRATIVE SUPPORT PERSONNEL										
Clerks, secretaries, drivers										
Professionals interpreters (non-UNDP projects)										
Sub-total-Administrative support personnel										
VOLUNTEERS (functional titles required)										
Sub-total-UN Volunteers [Ⓟ]										
Project travel										
Other personnel costs (including UNIDO staff mission costs)		96		96						
NATIONAL EXPERTS (functional titles required)										
Sub-total-National experts [Ⓟ]										
TOTAL-PERSONNEL COMPONENT		96		96						

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

US \$

PROJECT BUDGET/REVISION

ITEM NUMBER	18. TOTAL		17. 1987		18.		19.		20.	
	m/m	\$	m/m	\$	m/m	\$	m/m	\$	m/m	\$
TRACTS										
bonoraria										
FD										
bridal fellowships										
city tours; UNDP group training		11.000		11.000						
corvée training										
o-UNDP group training										
o-UNDP meetings										
ITAL-TRAINING COMPONENT		11.000		11.000						
ENT										
pendable equipment										
o-dependable equipment		10.000		10.000						
unions										
ITAL-EQUIPMENT COMPONENT		10.000		10.000						
LANEUS										
ndries		480		480						
opitality (non-UNDP projects)										
port costs (CC and DC projects only)										
TAL-MISCELLANEOUS COMPONENT		480		480						
S/DEFICIT										
spua/Deficit (ADM/PS use only)										
OBJECT TOTAL		21.576		21.576						
GT SHARING (UNDP/IPP projects only)										
T UNDP CONTRIBUTION										

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Information only - not for PAD input



PROJECT BUDGET/REVISION

COUNTRY	4. PROJECT NUMBER AND AMENDMENT TD/INT/87/U03/A/R9/37	5. SPECIFIC ACTIVITY J12311(31.5.C)
PROJECT TITLE IPGTP in the Field of Electric Welding, Kiev, UkSSR, September-December 1987		

Roubles expressed in US \$

INTERNATIONAL EXPERTS (functional titles required except for line 11-50)	16. TOTAL		17. 1987		18.		19.		20.
	m/m	\$	m/m	\$	m/m	\$	m/m	\$	m/m
01									
02									
03									
04									
05									
06									
07									
08									
09									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20 Short term consultants									
21 Sub-total - international experts*									

REMARKS

Exchange rate US \$ = Rouble 0,675 (as of November 1986)

* more than 10 experts are required check here and attach continuation sheet IA. This sub-total must include all experts.



Roubles in US \$

PROJECT BUDGET/REVISION

OBJECT NUMBER	16. TOTAL		17. 1987		18.		19.		20.	
	m/m	\$	m/m	\$	m/m	\$	m/m	\$	m/m	\$
10 EXPERTS (functional titles required)										
11 _____										
12 _____										
13 _____										
14 Sub-total—OPAS experts^b										
ADMINISTRATIVE SUPPORT PERSONNEL										
15 Clerks, secretaries, drivers										
16 Freelance interpreters (non-UNDP projects)										
17 Sub-total—Administrative support personnel										
VOLUNTEERS (functional titles required)										
18 _____										
19 _____										
20 _____										
21 _____										
22 Sub-total—UN Volunteers^b										
23 Project travel										
24 Other personnel costs (including UNIDO staff mission costs)		3,408		3,408						
25 NATIONAL EXPERTS (functional titles required)										
26 _____										
27 _____										
28 _____										
29 _____										
30 Sub-total—National experts^b										
31 TOTAL—PERSONNEL COMPONENT		3,408		3,408						

- 60 -

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

Roubles in US \$

PROJECT BUDGET/REVISIO

PROJECT NUMBER	18. TOTAL		17. 1987		18.		19.		20.	
	m/m	\$	m/m	\$	m/m	\$	m/m	\$	m/m	\$
SUBCONTRACTS										
31-00 Subcontracts										
TRAINING										
31-00 Individual fellowships										
32-00 Study tours; UNDP group training		178.762		178.762						
33-00 In-service training										
34-00 Non-UNDP group training										
35-00 Non-UNDP meetings										
36-00 TOTAL-TRAINING COMPONENT		178.762		178.762						
EQUIPMENT										
41-00 Expendable equipment										
42-00 Non-expendable equipment										
43-00 Premises										
44-00 TOTAL-EQUIPMENT COMPONENT										
MISCELLANEOUS										
51-00 Sundries		1.778		1.778						
52-00 Hospitality (non-UNDP projects)										
53-00 Support costs (CC and DC projects only)										
54-00 TOTAL-MISCELLANEOUS COMPONENT		1.778		1.778						
SURPLUS/DEFICIT										
51-00 Surplus/Deficit (ADM/FS use only)										
55-00 PROJECT TOTAL		183.948		183.948						
° COST SHARING (UNDP/IPF projects only)										
° NET UNDP CONTRIBUTION										

° For information only - not for PAD input

UNITED NATIONS DEVELOPMENT PROGRAMME

Interregional Project

Project Document

Summary

Title: In-Plant Group Training Programme
for Engineers in the Field of
Metalworking Industry, Moscow,
USSR.

Number: INT/87/U06/A/89/37 Duration: 17 weeks

The Project

Development Objective

The project is aimed at improving the level of the metalworking industries in developing countries and in particular, development of human resources through training in the field of metalworking industry.

Immediate Objective

To train 15 participants and to provide them with updated knowledge and practical experience in the field of metalworking industry and thus to assist them in performing their duties more efficiently and solving their problems in their daily work.

BACKGROUND AND JUSTIFICATION

The importance of the metalworking industry lies in the fact that this industry is basic to the process of industrialization for it produces the various means of production for all industries such as machine tools and other related machinery and equipment.

The programme was carried out by the Engineering Faculty of the P. Lumumba People's Friendship University, Moscow, in 1969 for the first time and since then has been repeated annually.

PROJECT OUTPUT

A total of 15 trained participants from Africa, Asia and the Pacific, Europe, the Middle East and Latin America will return to their home countries with the upgraded

professional knowledge and experience. They will be provided with the training material for an easy reference and use in their future work. The training is expected to allow them to introduce modern production methods in their firms and companies. It is also expected that some of them will run training courses for their colleagues upon return to diffuse the acquired knowledge.

Project Activities and Modalities of Project Implementation

The programme is especially designed for production engineers, who deal mainly with planning and execution of operations on metalcutting machine-tools, though a brief study of casting and forging processes is also provided.

These elements are arranged in a similar weekly schedule, i.e. Mondays and Wednesdays for lectures, Thursdays and Fridays for factory visits and Tuesdays for laboratory work, or individual projects.

(1) The theoretical lectures, representing about 40% of the training period will be given at the Engineering Faculty of the Lumumba People's Friendship University. The following subjects are included:

- Casting processes
- Cutting tools
- Technology of machine building
- Jigs and fixtures
- Kinematics of machine tools
- Forging processes
- Welding processes
- NC machine tools
- Technical measurement
- Workshop planning
- Machine tool maintenance
- Fundamentals of hydraulic drivers of machines

(2) The laboratory work which comprises 20% of the programme is conducted in smaller groups, each with own assistant to allow a better monitoring of the testing work. This laboratory work is intended to let the participants study more in detail the design of machine tools, methods of setting them up and research work in the field of metalworking. The subjects cover the following topics:

- Statistical methods of checking of machine parts
- Measurement of cutting forces
- Testing of pumps
- Testing of accuracy of manometers
- Measurement of gear accuracy
- Form inaccuracy measurement of machine parts
- Measurement of surface finish
- Determination of inaccuracy of machine parts location
- Setting of NC machines and work on NC machines
- Rigidity test of drilling machine
- Individual work in the casting laboratory

(3) The study visits which comprise 40% of the programme are arranged in relation to the subjects covered in the lectures and laboratory works. They are intended to give to the participants an opportunity to get acquainted with the manufacturing process of more complicated and accurate items. During the factory visits, participants can see the operation of equipment in workshops and study the employed machining parameters and drawings of tools and fixtures. They can also get advice from specialists of the factories to specific problems they have been facing at home.

(4) Two individual projects will be prepared by each participant outside normal working hours, one during the first months and another more sophisticated one, later during the programme. Each participant is requested to study practical problems in planning and preparation of the manufacturing process of machine tools and advice is offered by teaching staff when requested by participants.

(5) During the programme, several group meetings are arranged to exchange the experience of participants, their professional background and outline of their country.

UNIDO Contribution			UNIDE/ Roubles
UNEP Contribution (UNEP/USSE Trust Fund)		850	
<u>RL 15-00</u>			
UNIDO staff travel and per diem			
Mid-evaluation mission by a staff member			
-	Travel by AEROFLOT Vienna/V. Vienna		600
-	per diem Rbl.100 x 3 days		300
-	terminal expenses	48	
Mid-evaluation mission by a s.o. of UNEP/USSE			
-	travel by AEROFLOT Vienna/Moscow/Vienna		650
-	per diem Rbl.100 x 3 days		300
-	terminal expenses	48	
	Sub-total (RL 15-00)	95	2.300
<u>RL 32-00</u>			
International travel of 15 participants by AEROFLOT, including 10 by excess baggage for homeward journey only			
		7.500 ^{1/2}	22.500
Fellowship stipend (15 part. x Rbl.30x51 days)			
			22.950
(15 part. x Rbl.25x68 days)			
			25.500
Administration and Interpretation costs			
			10.000
Motorvehicle expenses			
			5.000
Travel within the USSR relating to the programme			
			3.600
Trainers and instructors			
			3.000
Winter clothing (emergency cases)			
			1.500
Preparation, translation and reproduction of up-dated training material			
			4.000
Miscellaneous expenses			
			2.500
	Sub-total (RL 32-00)	7.500	100.350
<u>RL 42-00</u>	Training Equipment	5.000	
<u>RL 51-00</u>			
Visit of 2 programme officials for final selection of participants			
-	travel by AEROFLOT Moscow/Vienna/Moscow (2 x Rbl.650)		1.300
-	per diem 2 x 3 days x 8 20	480	
	Sub-total (all RLs)	13.076	106.150
	\$ equivalent of Rbls.	154.296	
	Total	167.372	
	13% overhead charges	21.758	
	Grand Total	189.130	
(exchange rate US\$=Rbl.0.675 as of November 1986)			

II. USSR Government Contribution in kind

<u>RL 34-00</u>	Training facilities and staff	Rbls. 63.000 (equiv. of \$ 93.333)
1/2	for connection flights with AEROFLOT	

UNITED NATIONS DEVELOPMENT PROGRAMME

Interregional Project

Project Document

Summary

Title: In-Plant Group Training Programme for Engineers in the Field of Mineral Fertilizer Production Moscow, USSR.

Number: INT/87/U07/A/89/37

Duration: 13 weeks

The Project

OBJECTIVES

Development Objective

The project is aimed at improving the level of the mineral fertilizer production in developing countries and in particular, development of human resources through training in the field of mineral fertilizer industry.

Immediate Objective

To train 15 participants and to provide them with updated knowledge and practical experience in the field of mineral fertilizer production and thus to assist them in performing their duties more efficiently and solving their problems in their daily work.

BACKGROUND AND JUSTIFICATION

The shortage of food and the famine are the real obstacles for the developing countries, where there is need for development of the fertilizer production which constitutes an industrial input into the agricultural sector for the solution of the food problems in developing countries. Consequently, the training of industrial personnel is indispensable for the development of fertilizer production industry.

The programme was carried out by the USSR Ministry for Mineral Fertilizer Production and Research Institute GIAP, Moscow in 1972 for the first time and since then has been repeated annually.

The programme covers most aspects of technology and planning of mineral fertilizer production. It is designed for both nitrogen and phosphate fertilizer production specialists.

PROJECT OUTPUT

A total of 13 trained participants from developing countries of Africa, Asia and the Pacific, the Middle East and Latin America will return to their home countries with the upgraded professional knowledge and experience. They will be provided with the reference material for an easy reference and use in their future work. The training is expected to allow them to introduce modern methods in their firms and companies. It is also expected that some of them will run training courses for their colleagues upon return to diffuse the acquired knowledge.

I. USSR Contribution

EL 16-00

(KIND) staff travel and per diem
 Mid-evaluation mission by a staff member
 - Travel by AEROFLOT VIE/MOW/VIE
 - per diem Rbl. 100 x 3 days
 - terminal expenses
 Mid-evaluation mission by a s/n of Trng. BUD
 - travel by AEROFLOT VIE/MOW/VIE
 - per diem Rbl. 100 x 3 days
 - terminal expenses Rbl.

RF/Overp Trng.
 component

USSR/
 Rubles

\$

48
 48
 96
 2,300

EL 34-00

International travel of 15 participants by
 AEROFLOT, including 10 kg excess baggage
 for homeward journey only
 Fellowship stipend (15 part.x Rbl. 30x66 days)
 (15 part.x Rbl. 25x26 days)
 Administration and Interpretation costs
 Motor vehicle expenses
 Travel within the USSR relating to the programme
 Trainers and instructors
 Translation and reproduction of training
 material
 Miscellaneous expenses

7,300^{1/}
 22,500
 29,700
 9,750
 5,700
 5,300
 2,000
 4,000
 1,200
 2,000

Sub-total (EL 34-00) 7,400 82,350
 EL 42-00 Training equipment 13,000

EL 51-00

Visit to Vienna of 2 programme officials for
 final selection of participants
 - travel by AEROFLOT Moscow/Vienna/Moscow
 (2 x Rbl. 650)
 - per diem 2 x 3 days x \$ 80

1,300
 480

Sub-total (all ELs.) 23,076 85,950
 \$ Equivalent of Rbls. 127,333

Total 150,409
 13% Overhead charges 19,553

Grand Total 169,962

(exchange rate US \$ = Rbl. 0,675 as of November 1986)

Currency Requirements

(a) Convertible 42,629
 (b) Non-convertible 85,950

b) USSR Government Contribution in KIND
 Training facilities and staff.

Rbl. 48,000 (equiv. of \$ 71,111)

^{1/} For connection flights with AEROFLOT

Appendix 1

Programme directors' reports on changes to their programmes

The reports on the welding and mineral fertilizer programmes were provided to the mission through UNIDO and UNDP. The director of the metalworking programme submitted an up-dated version of his report directly to the mission and this is included in this Appendix.

**MAIN CHANGES INTRODUCED IN THE IN-PLANT GROUP TRAINING PROGRAMME
FOR ENGINEERS IN THE FIELD OF ELECTRIC WELDING**

**REPORT BY
THE PROGRAMME DIRECTOR**

1. The overall structure of the programme was re-composed and consists now of 6 parts, namely:
 - Basic theory of Welding
 - Fusion Welding
 - Resistance Welding
 - Technology for Welding of various structural materials
 - Principles of fabrication of welded structures
 - Organization and economic aspects of welding production and training of welding specialists.

2. The time allotted to the theoretical course was reduced from 190 to 145 hours and practical training at laboratories was increased from 115 to 165 hours.

3. The following new lectures were introduced:
 - Welding of non-ferrous metals (copper, aluminium, titanium etc.),
 - welding of dissimilar metals,
 - principles of computerization in welding,
 - organization of welding service and welding operators' labour in industry and construction,
 - a scheme for training welding specialists in the USSR and possible trends in training of welders in developing countries,
 - saving of resources in welding production.

4. Some laboratories were excluded and the following new laboratory courses were added:
 - Effect of various factors on arc stability,
 - distribution of stresses in welded joints,
 - welded joints and welds (demonstration of butt and fillet welds in various positions,
 - semi-automatic machines for gas-shielded arc welding with solid and flux-cored wires,
 - plasma welding machines,
 - technology and equipment for cold, diffusion and ultrasonic welding,
 - technology of welding of aluminium alloys in inert gases,
 - welding of dissimilar metals,
 - application of computer facilities in welding processes,
 - magnetic and radiographic testing.

5. Some industrial visits were cancelled and a number of new plants were added for observation studies: The Paton Institute Pilot Plant of Welding Materials, three plants in the city of Riga, two plants in the city of Tallinn.
 6. The number of technical films supporting theoretical and practical courses was increased from 10 to 29.
 7. The total of 26 textbooks, containing the summaries of lectures was re-edited and published anew. The following new booklets with summaries of lectures were issued: beam welding processes, special methods of pressure welding, welding of dissimilar metals, problems of organization and economics of welding production. Twenty one new booklets were published, containing the instructions for laboratory work, accompanying almost all theoretical courses.
 8. The lecture room was equipped with new furniture. In the rest-room, where participants relax between lectures and during lunch breaks, a billiard table, a colour TV set, a musical centre, a refrigerator etc. were installed. A tennis table was also put in the hall.
 9. Recently, the case-studies were introduced on the following main courses:
 - fusion welding (7 hours)
 - technology for welding of various structural materials(4 hours)
 - principles of fabrication of welded structures (8 hours).
 10. Introductory session among participants was held at the beginning of the programme by using the country paper as an input for discussion.
-
-

MAIN CHANGES INTRODUCED IN THE IN-PLANT GROUP TRAINING PROGRAMME
FOR ENGINEERS IN THE FIELD OF MINERAL FERTILIZER PRODUCTION:

REPORT BY
THE PROGRAMME DIRECTOR

The Programme takes 3 months. One month and a half - theoretical part which includes 28 lectures and one month and a half - training at the factories.

For the last 4-5 years the Programme was supplemented with the following lectures:

- Development of chemical industry and pollution problems.
- Multi-lateral co-operation of COMICON countries in the production of mineral fertilizers.
- Computers in designing plants for mineral fertilizer production.
- Organization of project works with GIAP - The State Institute of Nitrogen Industry - as an example in the USSR.
- Main sources of technical information on mineral fertilizers.

In 1986 a new lecture " The role of the manager and his work with personnel" was delivered by way of experiment. The lecture aroused great interest among the participants.

The Programme is annually corrected based on the participants' advice and proposals which they put forward at the final meeting. Thus, recently the lecture on corrosion problems in nitrogen fertilizer plants was added to the Programme.

In 1985/86 on participants' request the lecture "Sulphuric acid production in the USSR and abroad" was added with a new section "Production of sulphuric acid from pyrite".

Every 2 - 3 years the texts of the lectures on the main processes involved in mineral fertilizer production are revised and supplemented with new data based on recent development.

During training at the factories, if the participants request, we arrange additional lessons in power supply for plants, water preparation systems, plant laboratories, etc.

For the participants to get acquainted with the current level of engineering in the world, since 1985 we arrange their visits to the international science and engineering exhibitions held in Moscow.

We are planning to use video aids in the training programme starting from next year.

At present we intend to change the training factories for the new advanced ones.

OCTOBER 1986

M O D I F I C A T I O N S

IN THE TRAINING PROCESS OF IN-PLANT GROUP TRAINING PROGRAMME FOR ENGINEERS IN THE FIELD OF METALWORKING INDUSTRY FOR THE PERIOD FROM 1983 TO 1987

Modifications in the training process of the In-Plant Group Training Programme for Engineers in the Field of Metalworking Industry (further "Programme") in the period from 1983 to 1987 may have an everlasting character as well as a short-termed one in the frame of each concrete 4-month Programme.

The long-termed changes, concrete examples of which are given below, reveal, on one side, the modern aspects and tendencies of development of metalworking industry and, on the other side, include the 20-years experience which permits the administration to approach the Programme to the practical problems of the industrialization of the developing countries.

The short-termed changes in the training process are aimed at the concrete group of participants and are based on the analysis of the professional training, specialization and interest of each participant, which permits the training process to be more flexible in order to satisfy at certain extent the individual professional interest of each participant of the Programme.

The modifications in the training process from 1986 are aimed at the consistent realization of the recommendations of the UNIDO Expert Group Meeting on the metalworking and machine tools industry held in Moscow on the 22-27 of April 1985.

I. The long-termed modifications in the training process.

The long-termed modifications in the training process of the Programme are the following:

- introduction of the new disciplines such as: "Fundamentals of industrial electronics and electric drives", "Fundamentals of CAD/CAM/CAE", revealing the modern tendency of metalworking industry to wider implementation of computer aided equipment and CNC machine tools;
- introduction of the new principles of the composition of lectures directed to the extension of the active dialog between the participants and the lecturer during the study of theoretical disciplines, to the discussion of the concrete industrial problems, with which the participants meet in their practical work in their countries;
- organization of the individual work of the participants of the Programme with the technical literature with the further discussion of the material during the lectures and consultations;
- use of slides & films during the theoretical studies;
- making and placing in the class-room the following visual aids apparatus: basic location diagrams for location machine parts in fixtures, a manufacturing process of gears, machining a tool post axle, the typical individual project steps;
- publication of the lecture-notes on the following disciplines:
 1. Modern methods of metal and alloy welding.
 2. Fundamentals of metal cutting.
 3. Fundamentals of die forging process.
 4. Programmable equipment for automated production.
 5. Fundamentals of designing machine fixtures.
 6. Fundamentals of designing machine shops.
 7. Hydraulic drives of machines.
 8. Selection, indication & checking of accuracy of manufacture of machine parts.
 9. Fundamentals of machine tool design.
- three-languages publication (English, Russian and Spanish) of manuals for individual projects;
- preparation to the publication of lectures on the course "Fundamentals of casting" & English-Russian phrase-book and technical dictionary on metalworking industry (being printed);

- inclusion in the training programme of the laboratory work on setting up & programming CNC lathe;
- distribution among the participants of the monthly time-table & other materials copied on Xerox;
- mastering the usage of personal computers model MBC-16 PLUS (IBM PC XT Compatible) supplied by UNIDO in October 1987;
- improvement of the conditions of the theoretical & practical studies (specially equipped lecture-room etc);
- redistribution of the bulk of the training time increasing the number of practical studies & individual out-of-class work with the lecture-notes and reducing the theoretical part to 25-30%.

II. Short-termed modifications in the training process.

Taking into consideration the demand of the participants of 1983-1987, the following modifications were being made:

- the additional practical training on gas & electric welding in the training workshops;
- summary lecture on the modern methods of search, processing & utilization of the scientific-technical information for modern industrialization;
- additional lectures on heat treatment, galvanizing heat & chemical methods of surface treatment of machine parts in the course of "Technology of machine building";
- additional lectures and practical classes on the "Equipment, tests & manufacturing process for spur & helical gear production";
- additional lectures on principles, utilization & advantages of block fixtures with the inclusion of these questions into the programme of factory visits;
- more new information on factory standards on machine tool maintenance.

Owing the fact that the majority of the participants of the second Programme of 1987 are specialists in the field of maintenance & repair of the metallurgical equipment the following modifications were made in the Programme of 1987:

- the training process is reoriented to the study of the problems & peculiarities of piece & small lot production typical for maintenance & repair shops of metallurgical enterprises;
- the course of "Fundamentals of machine tool design" is realized as out-of-class individual optional study;
- visit to the additional enterprise of ferrous metallurgy - Moscow Pipe Factory - is included into the programme;
- the specialists of the Institute of the Ministry of ferrous metallurgy of the USSR are ready to give the necessary consultations if the participants desire so.

Mentionned above short-termed modifications of the study process of the Programme include the recommendations made by the UNIDO Expert Group Meeting of 1985 & meet the demands of individual professional interests of most participants so as the Programme doesn't surpass the set-on specialization.

Appendix 2

EQUIPMENT PURCHASED AGAINST BUDGET LINE 42

1. Electric Welding 1986 (US\$ 4,700)
 - a) Camera OXC102P
 - b) Power supply/remote control CMA-10CE
 - c) Lens VCL-164
 - d) Monitor KX-27PS (PAL/SECAM/NTSC 3,58/ntc 4,43)
 - e) SS-X2A speakers (set)
 - f) cable camera/monitor 10m length
2. Metallworking Industry II. 1987 (US\$ 5,000)
 - a) Sanyo Personal Computer (2) (IBM XT compatible) with two monitors and printer
3. Mineral Fertilizer Production 1987 (US\$ 16,500)
 - a) Sharp VC-5W20 UHS double VCR PAL B
 - b) National Panasonic NVMS VHS Video movie supplied with case, battery, AC adapter/charger, AV converter, earphone, shoulder strap.
 - c) JVC E1805HF super HI-FI VHS tapes 180 minutes - 40 pieces
 - d) National Panasonic TC4000G 40" one piece rear projection TV PAL/SECAM/NTSL
 - e) Copex LKP reader-printer with accessories
4. Electric Welding II 1987 (US\$ 10,000)
 - a) UPH-1040QM video projector
UPS-100FI 100-incl. flat screen
UPR-722 remote control unit
CCQ-25AR camera cable
PSS-10 suspension support
PSS-722 suspension support
 - b) PUM-9020ME colour video monitor
VGC-1 video cable 1 m

- c) JGC-5 video cable
 - DA-210 audio/video distributor
- d) TCM-1000E cassette recorder (2 pieces)
 - HF-60M audio cassette tape (30 pieces)
 - 1-506-138-11 pin plug (10 pieces)
 - 1-506-138-12 pin plug (10 pieces)
 - PC-21 mini-phono plug (4 pieces)
- e) ER-332 hand speaker 10 watts by TOA (2 pieces))

Appendix 3

MISSION PROGRAMME IN AFRICA

1. The mission was requested by UNDP Headquarters to visit three countries in Africa to interview former participants and their supervisors in all welding, metalworking and mineral fertilizer programmes held since 1983, whether or not they were financed from the UNDP/USSR Trust Fund. Egypt was selected as by far the highest number of former participants come from that country. The other countries, Sudan and Tanzania, were then chosen since reasonably high number of participants might be interviewed there (compared with other countries) and for geographical reasons.

2. UNDP field offices in Cairo, Khartoum and Dar es Salaam were asked by telex to arrange interviews with named participants. In all three countries the requests were dealt with the officer who looks after UNIDO matters (SPO in Cairo, SIDFA in Khartoum and Dar es Salaam) and thence referred to the Ministries of Industry in the three countries. In all cases, the ministries took the mission's work very seriously and did their best to trace participants, make them available, and in many cases to bring them considerable distances to the capital cities. The mission wishes to express its appreciation of the time and trouble devoted to this evaluation by the authorities and participants concerned.

3. The numbers of participants with whom the mission requested interviews, by country and course, were as follows:

	<u>Egypt</u>	<u>Sudan</u>	<u>Tanzania</u>	<u>Total</u>
Welding	8	5	6	19
Metalworking	5	3	2	10
Mineral Fertilizer	6	0	4	10
	-----	-----	-----	-----
Total	19	8	12	39

4. The actual members interviewed are as follows:

	<u>Egypt</u>	<u>Sudan</u>	<u>Tanzania</u>	<u>Total</u>
Welding	6	2	4	12
Metalworking	4	2	2	8
Mineral Fertilizer	6	0	3	9
Total	16	4	9	29

5. Out of the 29 participants interviewed the mission saw eight at their places of work. Four of these worked in two substantial factories in Egypt, three in more modest workshops attached to large enterprises in Sudan and Tanzania. The eighth is a civil servant whom the mission saw in his ministry in Tanzania. In addition the mission saw one participant at his living quarters at a sugar factory in Sudan since he was working the night shift and was off duty at the time.

6. The mission was able to see only two direct supervisors (of three participants), but meetings were held with a number of senior company officials and with senior officials in Ministries of Industry and other Ministries. These meetings were found to be very valuable and enabled the mission to stress the importance of nominating participants who were likely to be in a position to make use of the knowledge and skills gained in the Soviet Union.

7. The USSR government representative on the mission arranged meetings with the USSR Counselors for Economic Affairs, who represent GKES, in all three countries. These meetings enabled the mission to have a valuable exchange of views with the Counselors and their staff. In particular, it was suggested by the mission and readily accepted by the USSR representatives that if administrative problems or force-majeure situations arose they would intervene and provide such assistance as lay within their competence (as they have done in certain cases in the past). They might for instance assist with late requests for USSR visas or for Aeroflot tickets, communicating directly with GKES or with the UNDP field offices as required. The mission expressed its gratitude for the USSR mission's interest and concern.

8. The mission did not have time or opportunity to travel much outside the capital cities. The only major journey involved two days away from Khartoum and visits to sugar factories at Guneid, Sennar and Assalaya.

9. Participants were interviewed one by one in as relaxed an atmosphere as possible. In some cases ministry officials sat in, but did not appear to inhibit participants. A few group discussions were held to deal with matters of general interest, such as administrative matters. These took place when participants had been brought in together by Ministry officials, as was for instance the case with all six Mineral Fertilizer participants in Egypt who had travelled from Assiut, Alexandria, Kafr el Zayat and Suez. Participants were subsequently seen one by one.

10. Former Participants interviewed (29):

A. EGYPT (16)

1. Name
2. Programme
3. Present employer and position

1. Mr. MAIMOUH ABDEL SHAFIA ABDEL HALIM
2. Welding II 1984
3. El Nasr Automotive Coy., General manager Inspection, Lorries, Buses and Tractors.

1. Mr. MOHAMED AHMED KHALIL
2. Welding I 1985
3. SEMAF, Welding Inspection Engineer

1. Mr. SAID MOHAMED MAHMOUD FADL
2. Welding I 1986
3. SEMAF, Welding Inspection Engineer

1. Mr. BAHGAT SABET WANIESS
2. Welding I 1987
3. Delta Steel Coy., Chief of Maintenance Workshop.

1. Mr. MOHAMED HAMED SHOMAN
2. Metalworking 1985
3. Egyptian Copper Works, Manager of Rolling Mill and of R. + D.

1. Mr. SHAKER HAMED FARAQ
2. Metalworking 1985
3. General Metals Coy., Chief of Maintenance Workshop.

1. Mr. ABDALLA ABDELGHANI HASSAN
2. Metalworking 1983
3. General Metal Coy., Chief Engineer, New Projects Department.

1. ABDEL-FATTAH ABDEL-KAREEM
2. Welding I 1987
3. Nasr Forging Coy., Inspection Engineer.

1. Mr. EL SADEK AHMED EL SHAFEI
2. Welding I 1987
3. El Nasr Steel Pipes and Fittings Coy., Chief, Welding Testing and Repair.

A. EGYPT

(continued)

1. Mr. SAMIR SAID HUSSEIN
 2. Metalworking 1986
 3. El Nasr Steel Pipes and Fittings Coy., Chief Maintenance Engineer.
-
1. Mr. MAHMOUD ABDUL-HAMEED SARHAN
 2. Mineral Fertilizer Production 1984
 3. Financial Industrial Coy. General Manager, Single Superphosphate Plant, Kafr-el-Zayat.
-
1. Mr. FAYEZ DORTA SAMAAN
 2. Mineral Fertilizer Production 1983
 3. Financial Industrial Coy., General Manager, Single Superphosphate Plant, Assiut.
-
1. Mr. ABDEL-RADF GABR ABO-EL-HASSAN
 2. Mineral Fertilizer Production 1985
 3. Financial Industrial Coy., Manager, Single Superphosphate Unit, Assiut.
-
1. Mr. EL SAYED MAHMOUD KHAMLS
 2. Mineral Fertilizer Production 1986
 3. Financial Industrial Coy., Manager Research and Development, Single Superphosphate Plant, Kafr-el-Zayat.
-
1. Mr. MAHMOUD KHATTAB
 2. Mineral Fertilizer Production 1985
 3. El Nasr Fertilizer Coy., Suez. Foreman, Ammonia Synthesis Gas.
-
1. Mr. IBRAHIM MOHAMED EL-MAGRABY
 2. Mineral Fertilizer Production 1987
 3. Abu Qir Fertilizer Coy., Alexandria , Ammonia Production Manager.

B. SUDAN (4)

1. Name
2. Programme
3. Present employer and position

1. Mr. KHALID MOHAMED SALAM
2. Metalworking 1985
3. New Halfa Sugar Coy., Shift Engineer.

1. Mr. ABDEL MONEIM EL AMIN
2. Welding I 1985
3. New Halfa Sugar Coy., Shift Engineer.

1. Mr. MUSTAFA MOHAMED
2. Welding I 1986
3. Guneid Sugar Coy., Mechanical Engineer, Agricultural Equipment Workshop.

1. Mr. BADR EL DIN MAHGOUB ELKHASR
2. Metalworking 1986
3. Assalaya Sugar Coy., Shift Engineer.

C. TANZANIA (9)

1. Name
2. Programme
3. Present employer and position

1. Mr. G.S.A. MKASSI
 2. Mineral Fertilizer 1985
 3. Ministry of Industries and Trade, Acting Head of Chemical Industries Section, Directorate of Heavy Industries.
-
1. Mr. PATRICE RUTABANZIBWA
 2. Mineral Fertilizer 1983
 3. Ministry of Energy and Minerals. Head of Petroleum Section. (Desk Officer for Kilwa Ammonia Company project).
-
1. Mr. IBRAHIM SHAYO
 2. Mineral Fertilizer 1986
 3. Tanzania Fertilizer Coy., Tanga, Production Manager under Training.
-
1. Mr. RAYMOND SWAI
 2. Welding II 1986
 3. National Engineering Coy., Superintendent, Steel Erection Dept.
-
1. Mr. GEOFFREY'S SAIT
 2. Welding II 1982
 3. Aluminium Africa. Production Engineer (mild steel pipes)
-
1. Mr. MELCHIOR HILU
 2. Metalworking 1983
 3. Kilimanjaro Machine Tools Mfg. Coy., Planning and Materials Manager.
-
1. Mr. JORAM KALEGELE
 2. Metalworking 1985
 3. Kilimanjaro Machine Tools Mfg. Coy., Acting Production Manager.
-
1. Mr. JACKSON MTOKA
 2. Welding II 1986
 3. Tanesco. Production Engineer, Ubungo Workshop.
-
1. Mr. KENAN LYOVA
 2. Welding II 1984
 3. Tanesco. Electrical Plant Engineer, Kurasini Workshop.

11. Former participants listed for interview but not seen (10):

Mr. Yahia Abdel Hamid Badr (Egypt)
Welding II 1986
(Military Service)

Mr. Mohd. Abdel Maged Ahmed Nada (Egypt)
Welding I 1986
(Ill)

Mr. Fariq Mohd. Khalil (Egypt)
Metalworking 1985
(Urgent duties).

Mr. Sami Abdel Aleem Ibrahim (Sudan)
Welding II 1986
(Further training in Japan).

Mr. Musa Mohamed Ahmed (Sudan)
Welding II 1983
(Working in Saudi Arabia)

Mr. Farouk Yahia Mohamed Abdel Gadr (Sudan)
Welding 1986
(Mission travelling outside Khartoum at the time of appointment
made to see Mr. Farouk in Khartoum).

Mr. El Hadi Oleish Abdel Rahman (Sudan)
Metalworking 1985
(Further training in Federal Republic of Germany).

Mr. Prosper Alexander (Tanzania)
Mineral Fertilizer 1987
(On duty and located 9 hours from Dar es Salaam).

Mr. Daniel Mwambepo (Tanzania)
Welding 1984
(On duty and located far from Dar es Salaam).

Mr. Aloyce Mashawri (Tanzania)
Welding 1984
(Not traced).

Appendix 4

QUESTIONS TO FORMER PARTICIPANTS

The mission used the following list of questions as a guide to their interviews with former participants. The questions were not necessarily put in the order or in the exact words shown. Some were followed up with supplementary questions. On the other hand, not all questions were put to all participants interviewed.

Interviews were kept as informal as possible, and participants were encouraged to speak freely.

1. Which programme did you attend and when?
2. How did you hear about the programme?
3. Who suggested or decided that you should apply for it?
4. What are your professional qualifications and experience?
5. What was your position at that time?
6. If you have changed enterprises since the programme, did your attendance on the programme have any bearing on the change?
7. Have your position or your duties changed since the programme?
8. What did you think of the programme in general?
9. Have you been able to apply knowledge or skills acquired on the programme?
10. Can you give us an example of a specific technical change (new process, new procedure, new equipment) which has been introduced in your enterprise on the basis of information you acquired on the programme?
11. If the answer is no, why not? Irrelevance of programme content? Lack of financial or other resources in the enterprise or perhaps government restrictions on imports? Resistance by authorities in the enterprise or elsewhere?

12. Did you go to the Soviet Union with any particular technical problem for discussion there? If so, did you come away with a solution?
13. Were you given any individual consultations during the programme? If so, were they connected with the technical questions mentioned in 12, or with questions arising during the programme?
14. Have you conducted any formal training on the subject of the programme since you attended it? If so, please give information. (Numbers, standard, frequency, duration, method.) If not why not? (Lack of opportunity, lack of superiors' interest, lack of own confidence?)
15. Did your programme in the USSR include any lessons on training management or methods? Were they, or would they have been, useful?
16. Were you given any training or reference material during the programme? Have you made use of it for reference or training?
17. What about the duration of the programme?
18. How much of the subject matter of the programme has proved useful to you?
19. Do you think the information was well presented, in lectures, demonstrations, study visits?
20. Were factory visits useful?
21. Did you have enough work to do? Did you get enough practice, in the form of manual work or operation of machines, drawing or planning work, or report writing?
22. Has anybody else from this enterprise (or from your former enterprises as the case may be) attended a programme in the USSR? If so, which?
23. Have you any comments on language questions?

Interpretation
Participants' knowledge of English
Training/reference material
Russian lessons. . .

24. Was the cultural programme useful and/or enjoyable?

25. Were administrative arrangements satisfactory?

Time between acceptance and start of programme
Accommodation
Meals
Clothing
Travel
Excess baggage
Money.

26. Did you have occasion to consult a doctor, dentist, etc.?
If so, were the arrangements satisfactory?

27. Would you recommend your colleagues or others to attend a similar course?

28. Have you any recommendations for improvements in the programme?

29. Is your enterprise (or your former enterprise as the case may be) independent, privately owned, part of a larger group, parastatal, government operated?

30. Was your enterprise (or your former enterprise as the case may be) receiving international technical assistance from other organizations at the time of your programme, or before or since? If so, can you give us details?

31. Were you satisfied with the information you received about the programme at the time you submitted your application, and did your experience in the USSR correspond with this information?

32. If you were to be offered the opportunity to attend another programme in the USSR on the same subject, would you accept?

PROJECTS ON TRAINING OF NATIONAL PERSONNEL

TO BE HOSTED BY THE USSR AND HELD BY THE UN TECHNICAL ASSISTANCE SYSTEM IN 1987

No :	Title	: Timing	: Place	: Par-ants:	Remarks
I :	2	: 3	: 4	: 5	: 5

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION (UNIDO)

1. In-plant group training programme (IPGTP) for engineers in the field of metalworking industry (first round)	January-June	Moscow	17	
2. IPGTP for engineers in the field of iron and steel (first round)	February-May	Zaporozhye	22	
3. IPGTP for engineers in the field of electric welding (first round)	March-June	Kiev	17	
4. IPGTP for engineers in the field of grain milling and storage	March-June	Moscow	17	
5. IPGTP for engineers in the field of mineral fertilizer production	March-July	Moscow	17	
6. Expert group meeting on the problems and the prospects of the activities of the IPGTP in the field of iron and steel	June-July	Zaporozhye	20	
7. IPGTP for engineers in the field of metalworking industry (second round)	August 1987- January 1988	Moscow	17	
8. IPGTP for engineers in the field of iron and steel (second round)	August- December	Zaporozhye	22	
9. IPGTP for engineers in the field of electric welding (second round)	August- December	Kiev	22	
10. IPGTP for engineers in the field of technology and equipment of rice processing enterprises	September- December	Moscow	17	
11. Training programme in management of human resources development for industry	October- November	Moscow	17	

Appendix 5

UNITED NATIONS CONFERENCE FOR TRADE AND DEVELOPMENT (UNCTAD)

12. Regional seminars for the development of trade between Latin American countries and Socialist countries of Eastern Europe	May	Moscow	20
13. Subregional seminar for the development of trade between North African countries and Socialist countries of Eastern Europe	July or September	Moscow	20
14. Interregional workshop for trade representatives and economic counselors accredited to the USSR	December	Moscow	70
15. Seminar for Latin American countries on the management of shipping companies		Moscow Odessa	30

DEPARTMENT OF TECHNICAL CO-OPERATION FOR DEVELOPMENT (DTCO) OF THE UNITED NATIONS

16. Course in economic statistics (first round)	February-June	Tashkent	15
17. Course in collection and processing of statistical data (first round)	February-June	Tashkent	15
18. Course in economic statistics (second round)	September 1987 - January 1988	Tashkent	15
19. Course in collection and processing of statistical data (second round)	September 1987 - January 1988	Tashkent	15
20. Course in study of deposits of polymetal Ores	March-May	Leningrad	15
21. Course in sedimentary rocks geology	October-Dec.	Leningrad	15
22. Fifteenth session of the UN/USSR interregional demographic training and research programme in population and development planning	March-July	Moscow	20
23. Sixteenth session of the UN/USSR interregional demographic training and research programme in population and development planning	September 1987 - January 1988	Moscow	20
24. Interregional Seminar on national experience in achievement of far-reaching social and economic changes for the purpose of social progress	April	Tashkent	25

1	2	3	4	5	6
---	---	---	---	---	---

- | | | | | |
|-----|--|----------|--------|----|
| 25. | UN seminar on role of government in promoting the cooperative movement | May | Moscow | 32 |
| 26. | Interregional seminar to promote implementation of the guidelines for further planning and suitable follow-up in the field of youth | October | Moscow | 32 |
| 27. | Meeting of the UN experts on technical aspects of skill-building and technology transfer to developing countries in the field of population and development planning | November | Moscow | 5 |

ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND PACIFIC (ESCAP)

- | | | | | |
|-----|--|-----------|-------------------------------------|----|
| 28. | Seminar on low cost techniques of construction and maintaining roads through marshy wet and arid areas | August | Moscow
Petrozavodsk
Ashkhabad | 30 |
| 29. | United comprehensive approach to rural development planning | May | Moscow
Frunze | 26 |
| 30. | Planning of science and technology | September | Moscow
Erevan | 20 |
| 31. | Seminar on management of cooperatives | April | | 20 |
| 32. | Seminar on role of women in development | May | Tashkent | 25 |

ECONOMIC COMMISSION FOR AFRICA (ECA)

- | | | | | |
|-----|---|---------------------|----------------------------|----|
| 33. | Seminar and study tour on cartography development | July-August | Moscow, Minsk,
Dushanbe | 30 |
| 34. | Seminar and study tour on statistical programme development | July-August | Moscow
Leningrad | 35 |
| 35. | Seminar and study tour on engineering design and manufacturing of capital goods equipment | March | Tashkent | 35 |
| 36. | Seminar and study tour on African trade expansion for African businessmen in the USSR | August
September | Moscow, Kiev
Alma-Ata | 36 |

I : : 3 : 4 : 5 : 6

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION (UNESCO)

37. Seminar on cinema and development October Moscow 15

ECONOMIC COMMISSION FOR WESTERN ASIA (ECWA)

38. Seminar on port development 30

WORLD INTELLECTUAL PROPERTY ORGANIZATION (WIPO)

39. Training course on patent information June-July Moscow 25

INTERNATIONAL MARITIME ORGANIZATION (IMO)

40. Seminar on search and rescue at sea with July-August Moscow 50
particular emphasize on the future global Odessa
maritime distress and safety system

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO)

41. Course on accident investigation and April-May Moscow 20
prevention Leningrad

42. Course on airport commercial operations October - Moscow 20
management November Leningrad



This building may be acquired for conversion into accommodation for participants in UNIDO group training programmes. It is in the same street as the Advanced Training Institute of the Ministry of Grain Products, Moscow.



The tall building is the proposed extension to the Advanced Training Institute of the Ministry of Grain Products, Moscow. Two floors will be used as a permanent location for UNIDO group training programmes in various fields.

Appendix 6

In-plant Group Training Programme for Engineers in the field of
Electric Welding II
Kiev, UKSSR, 4 September - 19 December 1986

LIST OF PARTICIPANTS

1. AFGHANISTAN	Mr. Abdul Majad Bahsood WALL
2. BRAZIL	Mr. Derly Mello MACHADO
3. BURMA	U MYAT SWE
4. CHINA	Mr. Yongzhen LIU
5. CUBA	Mr. Gilberto Ricardo PORTAL MACHADO
6. EGYPT	Mr. Yahia Abd El Hamied BADR
7. GHANA	Mr. Johnson Kofi BEIDAKO
8. GHANA	Mr. Frank Anane POBI
9. INDIA	Mr. Prem SINGH
10. INDIA	Mr. Nagarajan NATARAJAN
11. SUDAN	Mr. Farouk Yahia Mohamed ABDELGADIR
12. MOZAMBIQUE	Mr. Arcanjo Joao JEREMIAS
13. NEPAL	Mr. Yagya Prasad ACHARYA
14. NIGERIA	Mr. Razac Adebayo BELLO
15. PAKISTAN	Mr. Tariq KHURSHID
16. SUDAN	Mr. Sami Abdelaleem IBRAHIM
17. SYRIA	Mr. Naser AL-SHAWISH
18. SYRIA	Mr. Majed AL NADER
19. TANZANIA	Mr. Jackson Sabila MTOKA
20. TANZANIA	Mr. Raymond Ernest SWAI

Numbers of countries invited:	45
Number of negative or no replies:	18
Number of nomination forms received:	78
Number of female nominations:	2
Number of candidates accepted:	20
Number of withdrawals:	2 (Iraq)
Number of participants from LDC:	6
Number of female participants:	-

In-plant Group Training Programme for Engineers in the field of
Mineral Fertilizer Production
Moscow, USSR, 11 July - 10 October 1987

LIST OF PARTICIPANTS

- | | |
|-----------------|---------------------------------|
| 1. AFGHANISTAN | Mr. S. Hashim OMAR |
| 2. BRAZIL | (left after 2 days' stay) |
| 3. BURMA | U Yin MG |
| 4. CHINA | (not arrived) |
| 5. CUBA | Mr. Gustavo BECERRA CARRERA |
| 6. EGYPT | Mr. Ibrahim Mohammed EL MAGRABY |
| 7. INDIA | Mr. Narayan NABOODIRI |
| 8. JORDAN | Mr. Mohammed Hussein NOSAIR |
| 9. MAURITIUS | Mr. Aboobakar KUMJAUN |
| 10. PHILIPPINES | Mr. Ermelo Boiser AVANCENA |
| 11. SYRIA | Mr. Mohammad Ammar SHARFO |
| 12. TUNISIA | Mr. Mouldi NESSIRI |
| 13. TANZANIA | Mr. Prosper A.B.T. ALEXANDER |
| 14. VIETNAM | Mr. Thai TRAN DOAN |
| 15. ROMANIA | Mr. Vasile BOTA |

LIST OF STAND-BY CANDIDATES

- | | |
|-----------|--------------------------------|
| 1. CHINA | Mr. ZHANG DEYAN |
| 2. JORDAN | Mr. Touqan NAZIEH |
| 3. BRAZIL | Mr. Ricardo Prado SANTOS |
| 4. EGYPT | Mr. Ibrahim Abdelbay ABDEL ALL |

In-plant Group Training Programme for Engineers in the field of
Electric Welding II
Kiev, UKSSR, 4 September - 18 December 1987

LIST OF PARTICIPANTS

- | | |
|---------------|---|
| 1. BRAZIL | Mr. Ubirajara Ferreira DA SILVA |
| 2. BRAZIL | Mr. Alvaro Pio ABREU, Jr. |
| 3. BURMA | U AUNG PWINT |
| 4. EGYPT | Mr. Rabie ADLY IBRAHIM |
| 5. EGYPT | Mr. Adel Abdel AZEM |
| 6. ETHIOPIA | Ato Zewdu TAFESSE |
| 7. ETHIOPIA | Ms. Amleset GUDETA |
| 8. GHANA | Mr. David Rudy Annang HOLM |
| 9. INDIA | Mr. Gorla Venkata RAMANA MURTHY |
| 10. NIGERIA | Mr. Olusegun Obaje Michael BALOGUN |
| 11. PAKISTAN | Mr. Arshad Ali KHAN |
| 12. SRI LANKA | Mr. Kankanam Pathirage Malik Wijenandana PERERA |
| 13. SUDAN | Mr. Azhary ABD-EL-RAHEEM ELIAS |
| 14. SUDAN | Mr. Ahmed Hammad MOHAMED ALI |
| 15. SYRIA | Mr. Mohamed Shaker DCUBA |
| 16. SYRIA | Mr. Jamal El-Deen APAGHANI |
| 17. ZAMBIA | Mr. Alexis Kasongo KASAWA |

LIST OF STAND-BY CANDIDATES

- | | |
|------------|---------------------------------------|
| 1. BRAZIL | Mr. Alberto Granville GUEDES DE PAULA |
| 2. EGYPT | Mr. Adel Ibrahim KOSTANDY |
| 3. EGYPT | Mr. Mohamed Farid AHMED |
| 4. NIGERIA | Mr. Adedeji AKINBOBOLA |
| 5. SUDAN | Mr. Mahmoud Zayed IBRAHIM |
| 6. SYRIA | Mr. Hisham SAFIEH |

In-plant Group Training Programme for Engineers in the field of
Metalworking Industry II
Moscow, USSR, 1 September - 26 December 1987

LIST OF PARTICIPANTS

- | | |
|----------------|------------------------------------|
| 1. AFGHANISTAN | Mr. Abdul SAMI |
| 2. AFGHANISTAN | Mr. A. Wasse (Munes) |
| 3. BANGLADESH | Mr. Mashuq-E-ELAHI |
| 4. BANGLADESH | Mr. Showkat ISLAM |
| 5. BRAZIL | Mr. Edemir ROSSI |
| 6. CHINA | Mr. Yan-An ZHANG |
| 7. CHINA | Mr. Guang Ying LI |
| 8. CUBA | Mr. Casimiro Eric RODRIGUEZ PIEDRO |
| 9. CUBA | Mr. Roberto FELIZ MORALES SUAREZ |
| 10. PDR YEMEN | Mr. Mohamed MOHSEN ALI |
| 11. INDIA | Mr. Alak Kumar MALLIK |
| 12. JORDAN | Mr. Ahmad Tayseer Bahjat ABUYAMAN |
| 13. MEXICO | Mr. Jaime PENA GARCIA |
| 14. NEPAL | Mr. Bishnu Prasad PANDEY |
| 15. SUDAN | Mr. Saif Eldin AHMED SULEIMAN |

LIST OF STAND-BY CANDIDATES

- | | |
|----------------|----------------------------------|
| 1. AFGHANISTAN | Mr. Sakhi Mohammad SHARIFI |
| 2. BRAZIL | Mr. Walter Lindolfo WEINGAERTNER |
| 3. BRAZIL | Mr. Saburo IKEDA |