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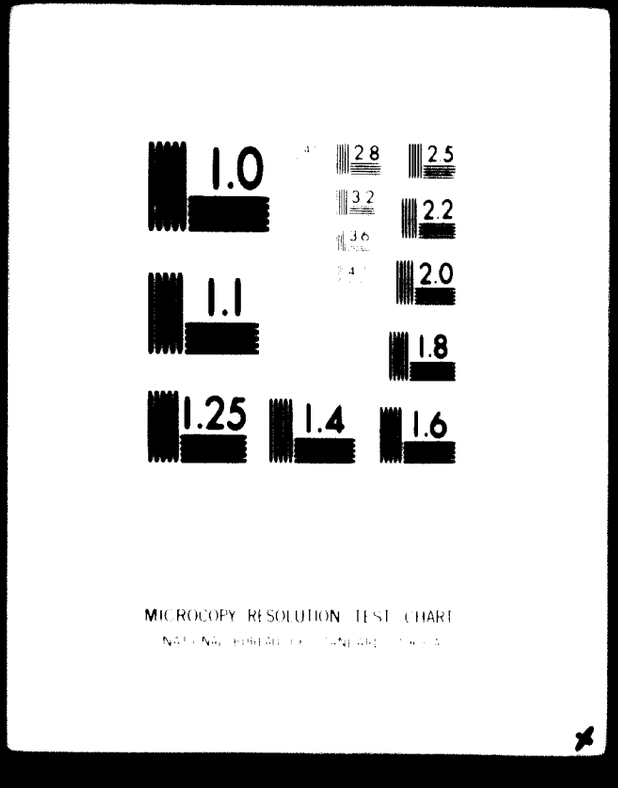

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INDUSTRIAL MANAGEMENT INTERNATIONAL AB

02760

Final Report

TEPCO FILECOPY

Received 5/11/71
Contract 70/41

UNIDO CONTRACT NO 70/41

REORGANIZATION AND IMPROVEMENT OF MANAGEMENT SYSTEMS IN EXISTING AND NEWLY DESIGNED PLANTS - SYMBOL SIS 69/560

FINAL REPORT

FÖRETAGSADMINISTRATION AB
Stockholm
Sweden

FÖRETAGSADMINISTRATION AB
Storgatan 19
Stockholm
Sweden

Re: UNIDO CONTRACT NO 70/41
Reorganization and Improvement of Management Systems
in Existing and Newly Designed Plants in Poland

On October 2, 1970 a contract was concluded between the United Nations Industrial Development Organization of the one part and Företagsadministration AB of the other part according to which Företagsadministration AB should make available for the performance of the work to assist in the

REORGANIZATION AND IMPROVEMENT OF MANAGEMENT SYSTEMS
IN EXISTING AND NEWLY DESIGNED PLANTS IN POLAND

eight man/months of service of the following five experts in Poland and, in addition, the services of such head-office personnel and technical facilities as shall be required to provide the necessary support for the experts serving in Poland. The experts' names, fields of activity and duration of field assignments should be as follows:

Mr. A. Warbert	Co-ordinating Chief	
Mr. G. Stenstrand	Industrial Management Expert - Team Leader (Training in Consultancy)	Four months
Mr. K. Lord	Value Analysis Expert	Two months
Mr. M. Haglund Mr. G. Thorén	Industrial Management Experts (Production Scheduling with application of EDP)	Two months

During the work it was requested that in the field of Industrial Management the duration of the part "Production Scheduling with application of EDP" should decrease with one week and the duration of the part "Training in Consultancy" should increase with one

week. In practice it was arranged that the visit to Poland by Mr. Haglund was omitted and instead Mr. Stenstrand had to make one more visit than planned to Poland.

Jointly with the Polish Management Development Centre (CODKK) and in co-operation with some Polish associations of industry and several Polish companies and institutes the experts should

- give assistance in the training of consultants in the fields of industrial management and engineering, with particular emphasis on the ways and means of identifying key problem areas, as well as in working out recommendations for improvement and supervision of implementation
- give assistance for the introduction of value analysis in selected enterprises
- give advice and assistance in the design and implementation of production scheduling systems, with application of EDP, in electronic industry enterprises.

During the assignment detailed plans for the work were made together with the management and counterparts from the Polish Management Development Centre.

The field work of the assignment was started on October 5, 1970 by the Value Analysis Expert. On October 26, 1970 the expert of Production Scheduling started his work. Both experts visited Stockholm for discussions with the team-leader about one month after the start.

The field work was concluded as planned by the Value Analysis Expert on December 4 and by the Production Scheduling Expert on December 20.

The Training in Consultancy Expert visited Poland during the week December 7 - 11. With the material and information that was obtained during his visit planning and preparation of the courses and seminars were performed in Stockholm. The field work continued subsequently in Poland on January 18, 1971.

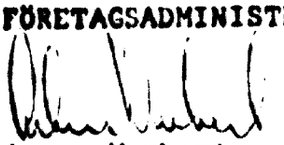
On request the field work was divided into two stages with the second stage June 5 - 19.

After this introduction the final report has the following contents.

1. Industrial Management
   Production Scheduling with Application of EDP
2. Value Analysis
3. Industrial Management
   Training in Consultancy

UNIDO and the Polish Management Development Centre have given valuable support and useful advice during the planning and accomplishment of the assignment which has been very much appreciated and helpful.

Stockholm, October, 1971.
FÖRETAGSADMINISTRATION AB



Artur Warbert

UNIDO CONTRACT NO 70/41

REORGANIZATION AND IMPROVEMENT OF MANAGEMENT SYSTEMS IN EXISTING AND NEWLY DESIGNED PLANTS - SYMBOL SIS 69/560

SECTION:
PRODUCTION SCHEDULING WITH APPLICATION OF EDP

FINAL REPORT

FÖRETAGSADMINISTRATION AB
Stockholm
Sweden

TABLE OF CONTENTS

1. INTRODUCTION

On October 2, 1970 a contract was concluded between the United Nations Industrial Development Organization and Företags-administration AB that Företagsadministration AB should provide the service of five experts to assist in carrying out a project entitled "Reorganization and Improvement of Management Systems in Existing and Newly Designed Plants in Poland".

One section of the project within the field of Industrial Management was denominated

PRODUCTION SCHEDULING WITH APPLICATION OF EDP.

The following report covers that part which was performed by Mr. Gösta Thorén as an industrial management expert.

The scope of the work was to give advice and assistance in the design and implementation of production scheduling systems with application of EDP in electronic industry.

The assignment has lasted from October 26 to December 20, 1970. At the arrival of the expert, allocation of time to the different parts of the assignment was agreed. A schedule was drafted and dated 31.10.70. Later, it became apparent that more concentration on the evaluation of the ERA system was desirable and a revised plan, dated 19.11.70, was drawn up. With only slight modifications according to the desiderata of CODKK, the work has been executed in conformity with plan.

The distribution of the expert's time in Poland has been roughly 5 weeks for ERA system, 1,5 week for UNIKABEL and UNIFARB contacts and 1,5 week for CODKK seminars.

2. ERA EDP SYSTEM

2.1. Development stage of system

On the base of a general planning system concept the joint team of ERA and CODKK personnel has elaborated EDP software programmes

and processing cycles. The EDP solutions are adapted to the constraints given by very limited computer facilities. For that reason, they are, for example, tape oriented. Still they are consistent with modern advanced software thinking.

The files designed comprise raw materials file, assemblies file, finished goods file, load centers file, special tools file, technological and structure master file and standard cost file. They are divided into two levels, the first level representing basic sequential files and the second being a more temporary file for aggregated data. The main purpose of this is simplified and more efficient computer runs. Only parts of the files and their function remain to be tested.

The processing cycles are conceived in a way to: 1) eliminate the need to make more than one pass of a sequential file for a specific function and 2) use the pass of a sequential file to perform all the functions needed.

The planning system modules covered by the created processing cycles and programmes are: breakdown for gross requirement, batching, inventory control with net requirement, tool control and output of work documentation. However, the extent, form and content of work documentation have not yet been finally established The module for detail scheduling with load smoothing has not been designed.

2.2 Factory conditions

A few short visits to production departments and planning bureau in the ERA factory has given some background for evaluating the probability of success for the system.

The manual procedures of planning work are on a rather low level and job cards, for instance, are not in extensive use. The lack of co-ordination of work is noticeable. A high degree of hot batches and waiting products is symptom of this problem. Managers in earlier stages of production do not know the desired sequence for the later stages.

In spite of these difficulties, the physical order in production departments is good.

2.3 Main fields of problems

The EDP part of the system does not appear to present any serious problem for the implementation phase.

The problems encountered and discussed pertain mostly to the following three fields:

- planning mechanism
- connection with manual procedures
- consequences for production activities

2.4 Evaluation and suggestions

The consequences and implications of the conceived system have been studied and penetrated in discussions with responsible persons from CODKK and from ERA. Special attention has been given to particular conditions prevailing in Poland and to limiting environment variables for ERA.

On the whole, the project team is encouraged to go on with the implementation of the modules already designed. As for the module of detail scheduling with load smoothing, it has been strongly recommended that it should be postponed. Manual scheduling routines and priority rules should first be worked out and put into function.

Before the implementation of the actual modules, however, some modifications are required in order to ensure a correct functioning of the system. Different alternatives have been discussed and suggestions or guidelines for the problem solving have been forwarded. In the following, a brief enumeration of the most important suggestions is presented.

- The number of planning levels should be reduced to the minimum necessary for action taking. The length of periods should be decreased for medium range in order to get sufficient control of material in-flow.

- Methods for calculation of minimum batch size are to be replaced by simple version of Wilson's formula for economic batches.

- On the base of appropriate distribution of batches of final products, the breakdown cycle will initiate production of sub-products. This approach is substituted for the even distribution of batches of all items.

- Principles for breakdown of master scheduling content and for detail scheduling range have been laid down.

- Simplified methods for keeping control of value of work-in-process have been presented.

- Sufficient control of availability of special tools can be exerted using very simple means.

- Viewpoints have been given regarding the extent and frequency of output reports as well as the adequate accuracy.

- A system documentation adapted to the needs and comprehension of the different departments involved is required and recommended.

- The EDP processing cycles might cause a skew distribution of the work load for the planning function. Therefore, a study of the different tasks must be undertaken and an efficient organization of manual work established.

- It is judged that the ERA EDP system hitherto is designed upon so general a concept that it should be applicable to other factories, especially within the same industry branch. Only minor modifications should be needed.

- A peripherical problem concerns technological design follow-up. An organizational solution has been proposed.

A special report covering the evaluation and the suggestions, with the title "Summary of Evaluation and Suggestions concerning ERA System", has been prepared and delivered directly to the ERA system project leader, Dr. M. Greniewski, and to the CODKK managers involved.

3. UNIKABEL CONTACTS

A preliminary joint discussion with people from UNIKABEL and UNIFARB was held on November 13. More general information about the industries and their problems was given and factory visits were planned.

During a short visit to the cable factory at Ożarów, some main problems were discussed. The most important appeared to be the material in-flow. The discussion revealed that better forecasting methods could not alleviate the difficulties to an essential degree since suppliers would not promise either delivery time or quantity. Forward planning technique was elucidated and suggested as a possibility to handle the detail scheduling problem in this particular situation.

Some problems were connected with the real resources requirements as compared with the forecast for the year. It was suggested to change the grouping of products in the forecast to give more homogenous groups from a requirements point of view.

Another short visit was made to the cable factory in Krakow, PKP "Polkabel" w Krakowie, where a few hours discussion with the production manager took place. Some minor amendments were proposed to simplify the control of raw material consumption and the routine for requiring raw material from stock.

In view of the limited time devoted to the cable industry, no firm opinion of their general stage of planning techniques can be expressed. It seems, however, that the time is not yet ready for introducing EDP system on a more advanced level, and no serious steps have yet been taken in this direction.

The different problems enounced gave impulses for the content of the special seminar-discussions which were planned for people from UNIKABEL and UNIFARB.

4. UNIFARB CONTACTS

General information about the paint and lacquer industry was given and visit to Wroclaw planned during the preliminary discussion mentioned in the previous paragraph.

The WFFiL factory at Wroclaw, Wroclawska Fabryka Farb i Lakierow, was visited and discussions held. The planning people had prepared a description of the background for the planning with a list of main problems. They were all treated during the discussions and some conclusions or suggestions were propounded. The different points included:

- production managers' latitude in scheduling
- means to increase coordination of production of sub-products
- introduction of more selective raw material inventory control with calculation of safety stock
- appropriate time for distributing production orders
- analysis of capacity losses for better knowledge of net capacity
- analysis of product rejection causes and structure for better knowledge of resources requirements
- treatment of inspection as an operation to plan and to load

The managing director showed the importance of reducing the cost of shipping and distribution. He contended that this part of the total cost was overwhelming compared with the inventory carrying costs and production costs that could be influenced by the planning system. Consequently, this problem was given the highest priority. The expert suggested that an EDP programme be developed to give the optimalized distribution pattern which would then serve as a basis for the production planning activity. The distribution problem is apparently of a standard linear-programming type and should not give serious difficulties.

Also for the paint and lacquer factory an EDP planning system does not seem to be an imminent need. Much can be done to render

the manual system more efficient, and the extent and lack of accuracy in technological and capacity data would present a great obstacle to an EDP system.

5. SEMINARS

5.1. CODKK seminar

The seminar was intended for CODKK staff members and invited guests from some associations.

It was judged that it was no need for giving general systems descriptions or theoretical concepts which can be found in most of the modern literature. Instead, stress was put more on typical problems experienced in practice. Some of the specific problems encountered in Poland were also taken up to discussion and analysis.

Simple graphic models were used to illustrate the relation between prevailing conditions, goals,alternatives and consequences. They were more directed towards a better understanding of real facts than trying to depict total concepts.

The general purpose of the seminar was for the expert to show and transfer methods for finding solutions, not to give ready solutions.

The three days seminar took place in the beginning of December and was held in English. About 20 people attended.

An outline of the seminar programme is shown in Appendix.

5.2. Seminar discussions for UNIKABEL and UNIFARB people

This seminar was arranged particularly for people from the associations mentioned and from factories belonging to them.

The programme was devised with the aim of enlightening upon their more typical problems but included naturally also more general experiences from planning systems successes and failures.

The same basic idea as for the seminar described above was applied for the content of this program, i.e. more concentration on experience than on general theories.

The two days seminar took place in the middle of December and was held in Polish language with the expert's counterpart as translator. Unfortunately, some events put an obstacle to participation in anticipated number and only 10-12 people were able to attend.

The contexture of the programme was similar to the CODKK seminar and is therefore not appended.

5.3 Panel discussions for UNIDO experts

During three days in December panel discussions were held with the participation of experts, CODKK staff members and invited guests from some associations.

Our expert participated in the panel during the second day, treating the subject of Management Information Systems. Then he served on the panel and conducted the discussions on the third day when the topic was Planning System. The contribution of our expert was made in cooperation with experts from the Maynard team. About 15-20 people attended each day of panel discussions.

6. GENERAL COMMENTS

It is not possible to form an opinion about the general state of production planning in Poland on the basis of a few examples. However, for the industries contacted during the assignment, some remarks could be made.

More efficient manual procedures might contribute considerably to the total efficiency, resulting in lower inventory level, better use of production resources and more reliable deliveries. Much remains to be done in this respect.

Better equipment is often needed to render the manual routines simpler and faster and sometimes to increase the possibility of better control. Unfortunately, some of the needed equipment must probably be imported from abroad which constitutes a highly restricting factor.

As for the use of EDP for production scheduling and control, it should be considered as an important tool but it must be applied with great caution. Admittedly, EDP can help to create order and system as a basis for production activities but it also demands, in return, a great deal of discipline in order to function properly.

Personnel resources are scarce and therefore, when an increased control is desired but would require more personnel, the EDP solution could be found advantageous. Especially is this true when big data quantities are involved or when a high flexibility in changing plans is needed, for example as a result of disturbancies in material in-flow.

The conclusion is that implementation of EDP should continue but with careful selectivity and critical judgement of actual conditions, expected advantages and difficulties in each case.

Perhaps one of the most fundamental points of interest should be to promote the continous change of attitude, to direct it and to accelerate it. It seems to be a lack of understanding of the role of the planning function and in which way it should contribute to attaining the goals of the company. In some occasions, it has been noted that the priority sequence of contradicting goals is not clear to middle and lower management levels which therefore leads to striving in different directions.

Naturally, specific conditions prevailing in Poland must be taken into account when judging the possibility of getting higher efficiency through better production planning. So is the custom of stating raw material delivery time only in quarters of a year a limiting factor. Another problem can be detailed constraints put from above the factory on some productivity factors thereby confining the scope for acting and improving.

Evidently, CODKK has a very important mission in propagating the knowledge and understanding of how the tool of production planning can be used to advantage. The expert has seen as one of his tasks to inculcate on CODKK staff members an insight in systematical

and practical approach to problem solving process connected with production planning.

7. SUMMARY

During his eight weeks' stay in Poland, the expert has studied and evaluated an EDP production scheduling system for a measuring instruments factory and given recommendations for modifications and continued development.

More general discussions about some specific planning problems have been held with people at factory level and association level in cable industry and paint and lacquer industry.

A seminar covering production planning topics has been organized primarily for CODKK staff. The expert has participated in experts' panel discussions treating management information systems and planning system. A special seminar has been arranged for people from cable and paint and lacquer industries.

During the assignment, a continuous training of a selected CODKK staff member in critical analysis and solving of production planning problems has taken place.

8. CONCLUDING REMARKS

The deputy research director of CODKK, Dr. J. Gościński, has been responsible for the main planning of the assignment and his support has very much facilitated its realization.

The suggestions concerning the ERA system are results of discussions with Dr. M. Greniewski, considered the project leader for the system. His involvement has been of a very positive and constructive character.

The expert's counterpart, Mrs. D. Królikowska, has proven to be of invaluable help to the expert and has largely contributed to the attained results.

The expert wishes to express his great satisfaction with the cooperation with management, project leader and counterpart.

Outline of CODKK seminar programme on production scheduling

(December 1970)

General view of production planning

1. Input-output model for an enterprise
2. Steering model as substitute for function isolation
3. Risk of suboptimalizing goals
4. Production planning - tool for coordination
5. Delivery capacity - one of competition factors
6. Lead time for resources and output
7. Model for planning levels and resources levels
8. Relation lead time - forecast
9. Customer-oriented or stock-oriented production
10. Main functions in production planning

Use of EDP

11. Why and when use EDP
12. Actual extension of use

System work method

13. Model for problem solving

Data and data flow

14. Data needed for input and output
15. Utility value of planning information
16. Real need for output information - action taking
17. Gross - net capacity
18. Optimal machine utilization
19. Accuracy/precision of information, time division
20. Work documentation and flow
21. Feedback for correcting standard data

Data processing

22. Programmed and not-programmed decision making
23. Examples of decision rules
24. Key problem in EDP scheduling: priority rules

Miscellaneous

25. Role of master scheduling in EDP

Organizational and psychological aspects

26. Model for centralization - decentralization problems
27. Human factors in successful implementation

Work steps

28. Normal implementation sequence
29. Preparation for EDP

Summary

30. Demands of/conditions for EDP system
31. Risks and advantages with EDP in production planning

UNIDO CONTRACT NO 70/41

REORGANIZATION AND IMPROVEMENT OF MANAGEMENT SYSTEMS IN EXISTING AND NEWLY DESIGNED PLANTS - SYMBOL SIS 69/560

SECTION:
VALUE ANALYSIS

FINAL REPORT

FÖRETAGSADMINISTRATION AB
Stockholm
Sweden

TABLE OF CONTENTS

1. INTRODUCTION

On October 2, 1970 a contract was concluded between the United Nations Industrial Development Organization and Företags-administration AB that Företagsadministration AB should provide the service of five experts to assist in carrying out a project entitled "Reorganization and Improvement of Management Systems in Existing and Newly Designed Plants in Poland".

One section of the project was denominated

VALUE ANALYSIS.

The following report covers that part which was performed by Mr. Kenneth Lord.

The scope of the work was to give assistance for the introduction of value analysis in selected enterprises.

The assignment has lasted from October 5th to December 4th.

2. WORK DONE

The work was divided mainly into two separate, but related parts, each overlapping the other. The first part was concerned with consultancy visits to three enterprises, to evaluate and advise on the work already started on three value analysis studies. Details of these studies, together with the results achieved appear in the Appendixes at the end of this report. The second part was devoted to training seminars at the Polish Management Development Centre (CODKK) where two separate groups took part in Value Analysis Training programmes.

The first group was comprised of thirteen managers drawn from a wide range of industries and the training programme was devised to give them a thorough appreciation of value analysis methods,

and potential benefits, without necessarily training them to operate as specialists. In this way they could be expected to contribute subsequently to the development and maintenance of value analysis programmes in their own enterprises. The second, much larger group, consisted of twentysix people, again from a wide selection of industries, who were intended ultimately to operate as value analysis instructors, in their various enterprises. The training programme in this case was designed to involve the trainees much more in direct participation, as well as to give them an appreciation of various training methods. The separate stages of the value analysis job plan were illustrated by using the results obtained from the three value analysis studies already described.

The two aspects of the work described occupied a period of seven weeks from 5th October to 20th November, 1970 and during the remaining two weeks of the assignment, until 4th December a number of informal lectures were given by the expert to groups of managers and directors, in order to reach the widest possible audience.

3. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Value analysis is at an early stage of development in Poland but the results so far obtained, on projects carried out by Polish V.A. specialists, show a good grasp of the subject. The level of theoretical knowledge of the techniques involved is very high, but practical experience in their application is not so advanced.

The training methods observed appear to have produced effective results although the participation of the trainees could be more active during the CODKK courses.

A much greater use could be made of simple case studies, of a general nature, to help the trainees develop experience during the training courses, and examples of products, before and after

analysis, taken from industry, would help the instructors in teaching the techniques. A rather less formal atmosphere than would apply in the United Kingdom was observed during the lectures and this led to a certain amount of digression on occasions. This problem was accentuated by having too large a group of trainees at the later seminar, making it difficult for the lecturer to maintain a sufficiently tight control. The degree of follow-up after the training courses at CODKK is, at present, probably insufficient to ensure fully successful continuation within industry, and it is likely that some of the training effort is dissipated because of this. The three projects undertaken as part of the assignment have shown very satisfactory results, with a conceivable average reduction in cost of the products concerned of 18 % and an anticipated annual saving of 9,6 mill. Zt.

There is little doubt that given the same thorough approach that was applied to the three projects in question similarly satisfactory results could be obtained in a wide range of industries. There is an obvious need for a more co-ordinated total approach to the problem of integrating value analysis into the overall plan for industry. Training courses at CODKK in themselves are insufficient to guarantee this integration and need to be reinforced by an effective system of "follow-up" consultancy in the enterprises themselves.

Recommendations

The training courses at CODKK should be seen as only the first step in a much longer chain of events. This should be designed to ensue that Value Analysis methods become accepted by management as a dynamic "tool" to be used by them for effective product cost control. The training schedule for any particular enterprise should therefore begin with a management appreciation phase and only end when it can be seen from the results that an effective V.A. programme is operating. Only then can CODKK reasonably withdraw from the scene in the knowledge that the enterprise will continue to produce satisfactory V.A. results.

On this basis an outline programme to cover the development of Value Analysis to its full potential in Poland has been worked out with CODKK and appears in Appendix 1. It is envisaged that CODKK would assume responsibility for co-ordinating the separate phases of this programme, assisted and advised by an independent expert. The degree of involvement of the expert in the outline programme would depend upon the abilities of the Polish personnel to implement the proposals, but in any case could be expected to reduce over a period of time.

4. SUMMARY

The results of three value analysis studies carried out as part of the assignment show an average saving of 18 %, giving an anticipated annual saving of 9,6 mill. Zlotys for the projects studied.

A programme is described to cover the development of Value Analysis in Polish industry.

The problems encountered during training seminars at the Polish Management Development Centre are discussed and ways of improving the effectiveness of the training methods described.

PROGRAMME FOR DEVELOPING VALUE ANALYSIS IN POLISH INDUSTRY

Stage 1. - Discuss and agree outline programme with appropriate ministry.

Stage 2. - Select enterprises for sequence of introduction of individual V.A. programmes.

Stage 3. - Discuss and agree with directors of each enterprise the following detailed programme to be undertaken by the instructor/consultant concerned.

3.1. - Conduct top management appreciation seminar.

3.2. - Appoint a steering committee.

3.3. - Appoint value analysis specialist(s).

3.4. - Train V.A. specialist(s). (Group training with specialists from other enterprises at 5-day course in CODKK.)

3.5. - Analyse expenditure of enterprise & products, together with V.A. specialist.

3.6. - Prepare a V.A. programme and set targets, together with V.A. specialist.

3.7. - Discuss and agree programme with steering committee.

3.8. - Collect and analyse information for first items on the programme together with V.A. specialist.

3.9. - Conduct short "in plant" appreciation seminar for operational management and supervision.

3.10. - Train V.A. team(s) using live projects selected from programme. (5 day "in plant" training course supervised by instructor/consultant and assisted by V.A. specialist).

3.11. - Continue the programme after training with formal and regular team meetings.

3.12. - Advise and assist V.A. specialist in preparation of action sheets and proposal summary sheets.

3.13. - Review the programme regularly with the V.A. specialist. Measure results and report to the steering committee.

3.14. - Extend the programme to include additional projects as necessary.

3.15. - Advise and assist the V.A. specialist to work progressively more in areas of value engineering and value administration.

Stage 4. - Repeat the above detailed programme in further enterprises. (Six enterprises simultaneously in one six months period, giving a total of twelve enterprises per year.)

Appendix 2

SUMMARY OF RESULTS ON THE THREE PROJECTS UNDERTAKEN

Project	Existing annual costs in 1000 Zt	Proposed annual costs in 1000 Zt	Anticipated savings from V.A. studies in 1000 Zt	% saving
Magneto-Elec. Core Holder	329	258	71	22
Power Cable Yaky 4 x 120	41.798	37.283	4.515	10.8
Asphalt Mass Ma 2	12.057	7.048	5.009	42
Total	54.184	44.589	9.595	18

VALUE ANALYSIS STUDY CARRIED OUT AT ZAKLADY WYTWORCZE PRZYRZADOW POMIAROWYCH ON MAGNETO-ELECTRIC COREHOLDER FOR LABORATORY MEASURING INSTRUMENT

Scope of Study

This important construction unit is used to fix the moving coil of the measuring instrument in its magnetic circuit, consisting of permanent magnets, lever, pole pieces and a core. The coreholder is made from aluminium alloy AK-11 by pressure die casting methods and has the following dimensions:

80 m/m x 45 m/m x 45 m/m, weight: 50 g.

The purpose of the study was to reduce the cost of the coreholder without any changes in construction of the magnetic circuit and movable structure, or the assembly tolerances.

Proposal Summary

By examining the cost of performing the functions of the coreholder the team were able to produce seventeen alternative designs which were evaluated according to their cost and technical feasibility. The best value idea was selected and produced the following savings:

Cost of Existing Design per 100 pieces	Cost of Proposed Design per 100 pieces
2995 . 71 Zt	2342 . 37 Zt
Unit Saving:	653 . 34 Zt per 100 pieces = 22 %
Quantity per annum:	11.000
Savings per annum:	71.867 Zt
Cost of implementation:	77.000 Zt (Tooling costs)
Tool life:	3 years
Savings over 3 years:	136.000 Zt
Further action:	Replace existing pressure die casting tool and manufacture blanking tool for new bridge piece. Introduce the change when existing tools are due for replacement.

VALUE ANALYSIS STUDY CARRIED OUT AT FABRYKA KABLI, OZAROW ON POWER CABLE YAKY 4 x 120 mm^2, 1 Kv.

Scope of Study

This power cable, for 3 phase operation at 380 volts A.C., has four quadrant shaped aluminium cores, each of 120 mm^2 cross sectional area. Each core is covered with P.V.C. insulation of a different colour; and the four cores are stranded together and wound with P.V.C. tape. The whole assembly is sheathed with an extruded P.V.C. outer cover. Polish standards PN-68/E-90301 and PN-68/E-90300 specify the thickness of the insulation, tape and sheathing.

The purpose of the study was to reduce manufacturing costs by 5 % whilst maintaining all the existing functions.

Proposal Summary

The team met to consider the necessary functions and generated a range of ideas from which eight alternative designs were produced. The best value design was selected and produced the following savings:

Cost of Existing Design per km	Cost of Proposed Design per km
59.711 Zt	53.262 Zt

Unit Saving:	6.449 Zt per km = 10.8 %
Quantity per annum:	700 kms (in 1971)
Savings per annum:	4,514.300 Zt
Cost of implementation:	30.000 Zt (Tooling costs) 10.000 Zt (Other costs) 40.000 Zt
Savings in 1st year:	4,474.300 Zt
Further action:	Produce 500 metres of cable to the new design and submit for tests to customer and standards committe. Introduce change when above approval is obtained.

VALUE ANALYSIS STUDY CARRIED OUT AT WROCLAWSKA FABRYKA FARB I LAKIEROW ON ASPHALT MASS MA 2

Scope of Study

This compund, consisting of a suspension of asbestos powder, aluminium bronze powder and fillers in a solution of bitumen and phthalie resins, is used for improving the corrosion resistance and sound aborption of the steel bodies of motor cars and railway waggons. The purpose of the study was to reduce manufacturing costs by 17 % whilst maintaining or improving essential functions.

Proposal Summary

By systematically analysing the cost of each item in the mixture, and considering the function performed in each case, the team was able to propose seven alternative mixes which were potentially lower in cost, whilst still achieving the required function. The best value mixture was selected and produced the following savings:

Cost of Existing Mix per 1000 litres	Cost of Proposed Mix per 1000 litres
12.057 Zt	7.048 Zt
Unit Saving:	5.009 Zt per 1000 litres = 42 %
Quantity per annum:	1.000.000 litres
Savings per annum:	5.009.000 Zt
Cost of implementation:	120.000 Zt (Research and production of test batch) 80.000 Zt (Experiment in sound 200.000 Zt aborption)
Savings in 1st year:	4.809.000 Zt
Further action:	Produce 50.000 litre batch of new mixture and submit 5.000 litres to customer for approval tests. Introduce the change in production when the results of above tests are known.

UNIDO CONTRACT NO 70/41

REORGANIZATION AND IMPROVEMENT OF MANAGEMENT SYSTEMS IN EXISTING AND NEWLY DESIGNED PLANTS - SYMBOL SIS 69/560

SECTION:
TRAINING IN CONSULTANCY

FINAL REPORT

FÖRETAGSADMINISTRATION AB
Stockholm
Sweden

TABLE OF CONTENTS

1 INTRODUCTION

On October 2, 1970, a contract was concluded between the United Nations Industrial Development Organization and Företagsadministration AB that Företagsadministration AB should provide the service of five experts to assist in carrying out a project entitled "Reorganization and Improvement of Management Systems in Existing and Newly Designed Plants in Poland".

One section of the project within the field of Industrial Management was denominated

TRAINING IN CONSULTANCY

The following report covers the part which was performed by Mr Gösta Stenstrand as an industrial management expert.

The scope of the commission was to give assistance in the training of consultants in the fields of industrial management and engineering, with particular emphasis on the ways and means of identifying key problem areas, as well as in working out recommendations for improvement and supervision of implementation and, in particular:

- carry out a preliminary survey of selected enterprises
- design a training programme and run a course for selected men of high caliber in general consultancy
- recommend suitable training materials and case studies to be translated into Polish.

The assignement has lasted as follows

1970 December 7 - 19
1971 January 18 - April 25
June 5 - 19

After a visit by Mr Stenstrand in Poland in December, 1970 a schedule was drafted and dated 21.12.70. Later, it became apparent that PMDC had difficulties to fulfil the arrangements according to the plan and therefore some changes were discussed and a new schedule was settled and dated 15.3.70.

2 CONTACTS

Mr Stenstrand has worked in collaboration with staff-members from different departments in PMDC but also with staff-members in other organizations in order to fulfil the commission. In Appendix 1 will be seen the different Organizations and Persons who have been involved in the expert's work.

3 THE THEORETICAL PART OF THE COMMISSION

This part of the commission can be divided into five different types of activities, namely

1. participation in evaluation and modification of a training programme for consultants

2. lectures given for consultants in above mentioned training programme

3. a five days course given for about 15 staff-members in PMDC regarding Management Consulting

4. some seminars with people from different Associations in the level of Directors and Head of Departments

5. some seminars with people from Organization Departments in different branches.

3.1 Training programme for consultants

3.1.1 Present situation

PMDC has designed a course for 20 Management Consultants, running for 12 weeks in three parts. The first part is a theoretical one for 5 weeks. The second part is a practical one, also for 5 weeks. Investigations are made in two different enterprises with 10 course-members in each group. Each man is dealing with only one problem during this investigation. After the practical phase a new theoretical part of 2 weeks is following.

3.1.2 Main fields of problems

The problems encountered and discussed pertain mostly to the following fields

- the length of each part of the course is too long, also the total course is too long
- the mixture of lectures makes it difficult to get a general view to make it possible to combine problems linked to one another
- the data collection regarding the present situation is too big and general
- each man will get experience only from one field in an enterprise's activity because he is dealing with the same problem during the whole practical phase
- the problems only inside the enterprise are studied.

3.1.3 Evaluation and suggestions

The training programme has been studied thoroughly and a special report has been worked out and presented to the Head of Organizing and Consultancy Department in PMDC. The following suggestions may be mentioned as an example:

- shorten the whole course from 12 to 11 weeks
- introduce another mixture of lectures which results in a more homogeneous sequence of similar problems
- divide the course into 3 theoretical parts (2 + 2 + 2 weeks) and into 2 practical parts (2 + 3 weeks)
- concentrate in the first theoretical and practical part (2 + 2 weeks) on management and organization problems in order to give all course-members experience to make investigations in this special field
- concentrate in the second theoretical and practical part (2 + 3 weeks) on production and other technical problems
- concentrate to the third theoretical part lectures on some overlapping problems, on discussions from the field activities and finally on a Management Game
- compose teams in the practical part of the course in order to train the course-member to collaborate in attacking organization problems.

3.2 Lecturing in the training programme

This part of the commission was planned in collaboration with the Head of Organization and Consultancy Division in PMDC in order to get a good integration with other theoretical parts of the course.

In the lecturing different visual teaching methods were used, such as flannellograph table, over-head projector and slides. The lecturing was given in English and translated into Polish. The course-members accessed all figures used in the lecturing with the text translated into Polish.

Subjects for the lecturing will be seen in Appendix 2.

3.3 Course for staff-members in PMDC

A special 5-days course was arranged for about 15 staff-members in PMDC concerning Management Consulting.

The goal was to give an information how the management consultant is working. In this lecturing part of the materials, shown in Appendix 2, was used, but so were also materials from a Pilot Study, done by the expert in the Paint and Varnish Factory "DOLLAK". A special part of the course was dealing with information about the planning of an investigation as a proceeding of the above mentioned Pilot Study to be done in co-operation with some of the course-members. In this part also special check-lists were used to show one way to find out main problems in an enterprise.

3.4. Seminar for POLIFARB*)

In connection with the investigations in DOLLAK and POLIFARB there was also arranged a 2-days seminar for about 35 people including the General Manager and his staff-members from POLIFARB and the Managing Directors for all the 15 factories.

The following programme was worked out:

1. Concept of
   - Management
   - Administration
   - Organization

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*) Association of Paint and Varnish Factories in Poland

2. Organization and Administration Problems
   - Structure
     - DOLLAK
     - POLIFARB
     } present situation and new suggestions
   - Centralization/decentralization
   - Concentration/co-ordination
   - Project organization inside a base organization
3. Management Consulting
   - Abroad
   - In Poland
     - Present situation
     - In the future
4. Management by Objectives
   - General presentation
   - Preparation for introduction in Poland
5. Final Discussion

In this seminar also Mr. Jakóbiec and Mr. Chrościcki from PMDC were lecturing.

3.5 Seminars for different Branch Organization and Norm Centres

Special 1-day seminars were arranged for about 200 persons in 54 Branch Organization and Norm Centres from 12 different Ministries. In Appendix 3 a list of participants will be seen.

During these seminars the following subjects were dealt with:

1. Management Consulting in general
2. Criteria for selecting Management Consultants
3. Planning of an investigation
4. Project Organization inside a base organization
5. Investigations done in Poland
   - Pilot Study in DOLLAK
   - Main Study in DOLLAK
   - Main Study in POLIFARB
6. Discussions

4 THE PRACTICAL PART OF THE COMMISSION

In order to introduce a new approach and train the staff-members in the Organization and Consultancy Division in practical applications after the theoretical part, the following investigations were started out

- Pilot Study in DOLLAK and POLIFARB. A special report was done in February
- Investigations in DOLLAK and POLIFARB according to recommendations given in the Pilot Study report. Two special reports were done, the DOLLAK-report in March and the POLIFARB-report in April.

4.1 The Pilot Study

In order to form an opinion of the situation in DOLLAK, including connections to POLIFARB, the expert performed a Pilot Study during three days assisted by 2 staff-members from PMDC and 1 staff-member from BOONP. In this study different check-lists were used, combined with interviews of different persons in leading positions.

The Pilot Study pointed out that improvement could be done in various parts of the organization. The following problems were listed as a base for further investigations.

Main problems

1. Structure of Organization
2. Information system
3. Marketing and Sales Activities
4. Production Planning
5. Materials Handling and Storage
6. Office work

Other problems

7. Personnel Planning
8. Profitability and Cost Accounting
9. Preventing Maintenance
10. Planning of External Transports

It was suggested to go further with investigations more in detail and to concentrate on the Main Problems.

As this investigation also had the goal to train staff-members in PMDC and BOONP it was important to organize the work in such a way that the whole staff could be engaged in the investigation. For this purpose it was suggested to establish a project organization where also people from the factory should be engaged. The project organization suggested will be seen in Appendix 4.

After information the Managing Director in DOLLAK agreed to go further with a more detailed investigation according to suggestions in the Pilot Study-report.

The General Manager in POLIFARB also agreed to go further with the problems, which were in Team 1 and connected with POLIFARB, namely

- Organization structure for POLIFARB
- Information system in the whole Association
- Marketing problems in the whole Association

4.2 Main Study in DOLLAK

4.2.1 Procedure

The Main Study was carried out during two weeks in accordance with the plan done in the Pilot Study-report and with the Project Organization suggested.

During the work many meetings were arranged by the project leader to discuss actual methods how to attack different problems. For example the following methods were discussed and used

- 80/20-rules for problem solving
- ABC-rules for Store-keeping
- The Logistic-idea for Materials handling
- Management by exception for information systems
- Concentration/co-ordination
- Centralization/decentralization

In order to introduce the approach for making investigations different check-lists and other forms were used during the study.

4.2.2 Analysis

After finishing the field-study the project-members from PMDC spent 3-4 weeks for analysis of the materials collected during the study. In this work it becomes clear that different problems were linked to the decision-making in POLIFARB, and therefore suggestions could not be done only for DOLLAK. Due to these circumstances the analysis work was carried out to different levels in each team.

4.2.3 Recommendations

A report was worked out containing one general part concerning aims, procedure, subject and general conclusions of the investigations and one detailed report from each team put into the report as Appendices.

In the first Appendix recommendations regarding a new structure of Organization was given.

In the second Appendix a new Production Planning System was recommended.

In the third Appendix different suggestions were given to go further with investigations concerning Materials Handling, Storage and Maintenance. The problems were divided for short and long term actions.

In the fourth Appendix at last suggestions were given both for short and long term actions for reviewing the Office Work.

4.3 Main Study in POLIFARB

This study was principally dealing with problems concerning

- Structure of Organization
- Information System
- Marketing Activities

and was carried out by the expert in collaboration with Mr. Chrościcki from PMDC. In this study also connections with many other units of the Polish Society were shown to get a total view of the circumstances under which POLIFARB was working.

The recommendations for a new structure affected

- the span of control
- co-ordination of planning
- management service functions
- information system
- marketing activities

Regarding Information System it was suggested to go further with more detailed investigations and therefore a plan was set up how to attack the problems step by step.

Regarding the Marketing Activities suggestions were given how to organize the work for short and long term actions including the needs of training.

5 GENERAL COMMENTS

In Poland the interest in development of industrial management is very big. Normally these activities are performed in special Organization and Norm Centres in each branch. The number of staff-members in these centres can range from 10 to 40 depending on the number of factories and the dimension of each factory.

This interest in industrial management is focused on problems inside the factory. It seems to be unusual that problems lying outside the factory are taken into consideration when an investigation is carried out.

Inside the factory mostly technical problems are dealt with. Investigations including organization structure, marketing, information systems or office work are exceptional.

PMDC is the central institute in Poland for educating and training people dealing with industrial management as managers or specialists. In the training activities of PMDC the above mentioned areas are seldom taken into consideration.

For the future the General Manager of PMDC has decided to include the marketing activities in the training programme and one man was working with the planning of such a course. The expert was involved in the discussion how to introduce this type of activities in POLIFARB and later on in the factories.

The interest also to include the approach for making investigations introduced by the expert seems to be very big. One staff-member of PMDC is preparing series of articles for publishing in periodicals concerning the approach introduced.

6 SUMMARY

During the four months stay in Poland the expert has been working with Training in Consultancy both theoretically and practically.

The theoretical part of the commission has consisted of

- participation in evaluation and modification of a training programme for consultants
- lecturing in above mentioned training programme regarding a new approach for making investigations
- a five days course given for staff-members in PMDC regarding Management Consulting
- some seminars for 1 day or 2 days specially arranged because of the expert's stay in Poland
- some seminars with lecturing in Management Consulting and introduction of a new approach of making investigations.

The expert has been lecturing for about 300 persons from 12 Ministries representing 54 Branch Organization and Norm Centres, different departments in PMDC, different factories in chemical, cable and many other types of industry.

The practical part of the commission has consisted of three investigations in the chemical industry in accordance with the new approach introduced during the theoretical part, namely

- Pilot Study in the factory DOLLAK in Wroctaw. The study was done with staff-members from PMDC and the Branch Organization and Norm Centre (BOONP) in the Association of Dyes and Varnishes factories (POLIFARB) in Gliwice. Main problems were pointed out and suggestions for investigations with a special Project Organization was done.
- Main Study in DOLLAK with a field study during two weeks and a phase for analysis and recommendations of 3 - 4 weeks. About 20 staff-members from PMDC, BOONP and DOLLAK were engaged in the investigation.
- Main Study in POLIFARB in connection with problems attacked partly in DOLLAK but also investigations in order to suggest a new organization structure.

During the commission a continuous discussion and training of selected PMDC staff-members in Management Consulting has taken place.

Materials used in the theoretical part of the commission have been translated into Polish and distributed to the participants in different courses and seminars.

One staff-member in PMDC is preparing series of articles for publishing in periodicals concerning the approach introduced by the expert.

7 CONCLUDING REMARKS

The Head of Organization and Consultancy Division Mr Wieslaw Jakóbice has been responsible for the main planning of the commission and his support has facilitated its realization. Mr. Jakóbice´s capacity to establish very good contacts with people in different levels in order to start out and fulfil the practical part of the commission has been of special value.

The counterpart to our expert, Mr Zbigniew Chrościcki has proven to be of invaluable help to the expert. Mr. Chrościciki has largely contributed to the attained results due to his wide experience and his very good knowledge about Management by Objective.

The expert wants also to express his great satisfaction with the cooperation with Head and staff-members in PMDC, DOLLAK and POLIFARB. Due to these very good relations it has been a pleasure to fulfil the commission in Poland.

LIST OF PERSONS CONTACTED

1 Organizations for Management Development

1.1 Commission for Organization and Management

- Minister: Mr. T. Kochonowicz.

1.2 Polish Management Development Centre

- Managing Director: Mr. Zbigniew Prochot
- Deputy Director Research: Dr. Janusz Gościński
- Head of Organization and Consultancy Division: Mr. Wiestaw Jakóbiec
- Senior Consultant in Division Forecasting and Coordination: Mr. M.Sc.eng. Zbigniew Chroscicki
- Head of different Departments

1.3 Branch Organization and Norm Centre in Chemical Industry (BOONP)

- Managing Director: Mr Bohater
- Senior Consultant in Organization Development: Mrs. I. Suska

1.4 Branch Organization and Norm Centre in MERATECH

- Managing Director: Mr Skręta

2 Polish Chemical Industry

2.1 Association of Paint and Varnish Industry in Poland (POLIFARB)

- General Director: Engineer Zenon Korgol
- Head of Organization Department: Mr. R. Jaróez
- Head of Planning and Programming Department

2.2 CHEMIA

- Managing Director
- Head of different departments

2.3 Commercial Centre for POLIFARB (CHEMIFARB)

- Managing Director
- Economical Director
- Head of Publicity Department

2.4 Dyes Factory in Wrocław (DOLLAK)

- Managing Director
- Economical Director
- Commercial Director
- Head of different departments

3 Polish Cable Industry

3.1 Cable Factory in Ożarów

- Managing Director
- Head of different departments

SUBJECTS FOR LECTURING IN THE TRAINING PROGRAMME FOR CONSULTANTS

1. Comparison between the Polish and Swedish market for management consultancy

2. Different types of competition in the consultancy field in Poland and in Sweden

3. Criteria for selecting consultants
   1. Capacities
   2. Attributes
   3. Abilities

4. Preparing for an investigation
   1. Practical arrangements depending on the type of problems to be discussed
   2. Definition of domain and goals for the investigation
   3. Definition of the consultants' tasks
      - delimitation of the consultants' work
      - collaboration with the client's people
      - type of reports
      - realization of suggestions
      - training connected with realization
   4. Plan for the investigation (time and resources)
   5. Offering the consultant-job

5. Typical goals for an investigation
   1. Determine waste and deficiencies in the whole organization or in parts thereof
   2. Improve methods and systems in the administration and technical field
   3. Develop better planning and control system in different fields
   4. Introduce more efficient operations

6. The urgency of observing the connection between different functions in an enterprise to keep away from suboptimation

7. Methods to discover main problems for short and long term actions

8. The project-idea

   1. Definition of a project

   2. Co-ordination of functions and resources in a project

   3. Relationship between a project and the base organization

   4. Different models for project organization

   5. The consultant's position in a project organization

      - working project member
      - member of a decision group
      - project manager
      - project co-ordinator

9. Managing and project organization

10. The organization department's position in an enterprise

11. Active or passive way to run an organization department in an enterprise

12. Discussions in connection with each part

PARTICIPANTS IN DIFFERENT SEMINARS

1. Ministry of Building Industry
   - 10 Branch Organization and Norm Centres (BONC)

2. Ministry of Local Government
   - 1 BONC

3. Ministry of Communication
   - 1 BONC

4. Ministry of Forest and Wood Industry
   - 4 BONC

5. Ministry of Post and Telephone
   - Centre of Organization and Mechanization

6. Ministry of Chemical Industry
   - 1 BONC

7. Ministry of Heavy Industry
   - 10 BONC

8. Ministry of Textile Industry
   - 1 BONC

9. Ministry of Machine Building Industry
   - 20 BONC
   - 1 Institute of Organization

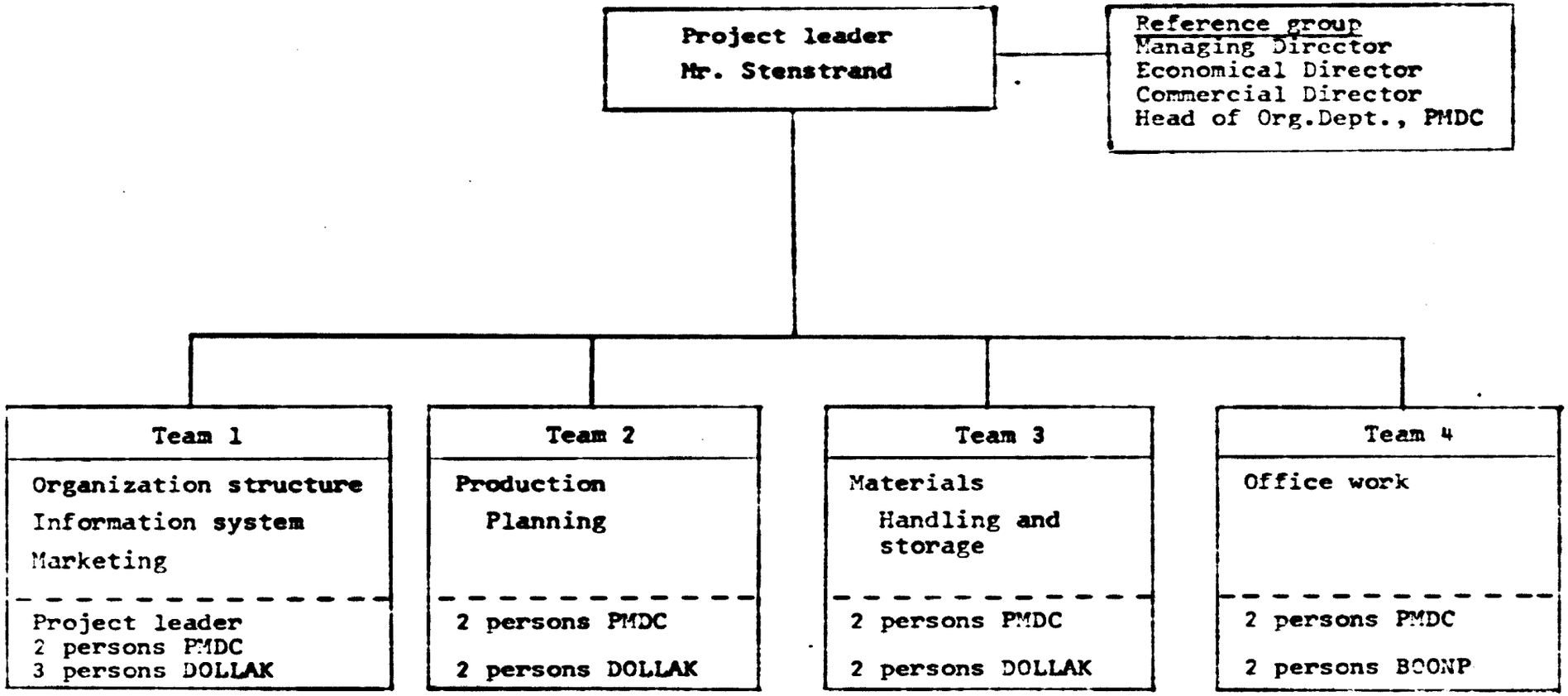
10. Ministry of Food and Agriculture
    - 1 BONC

11. Ministry of Shipping
    - 2 BONC

12. Ministry of Electronic Industry
    - BONC

Total 190 persons

Project Organization
for investigation in DOLLAK



Appendix 4

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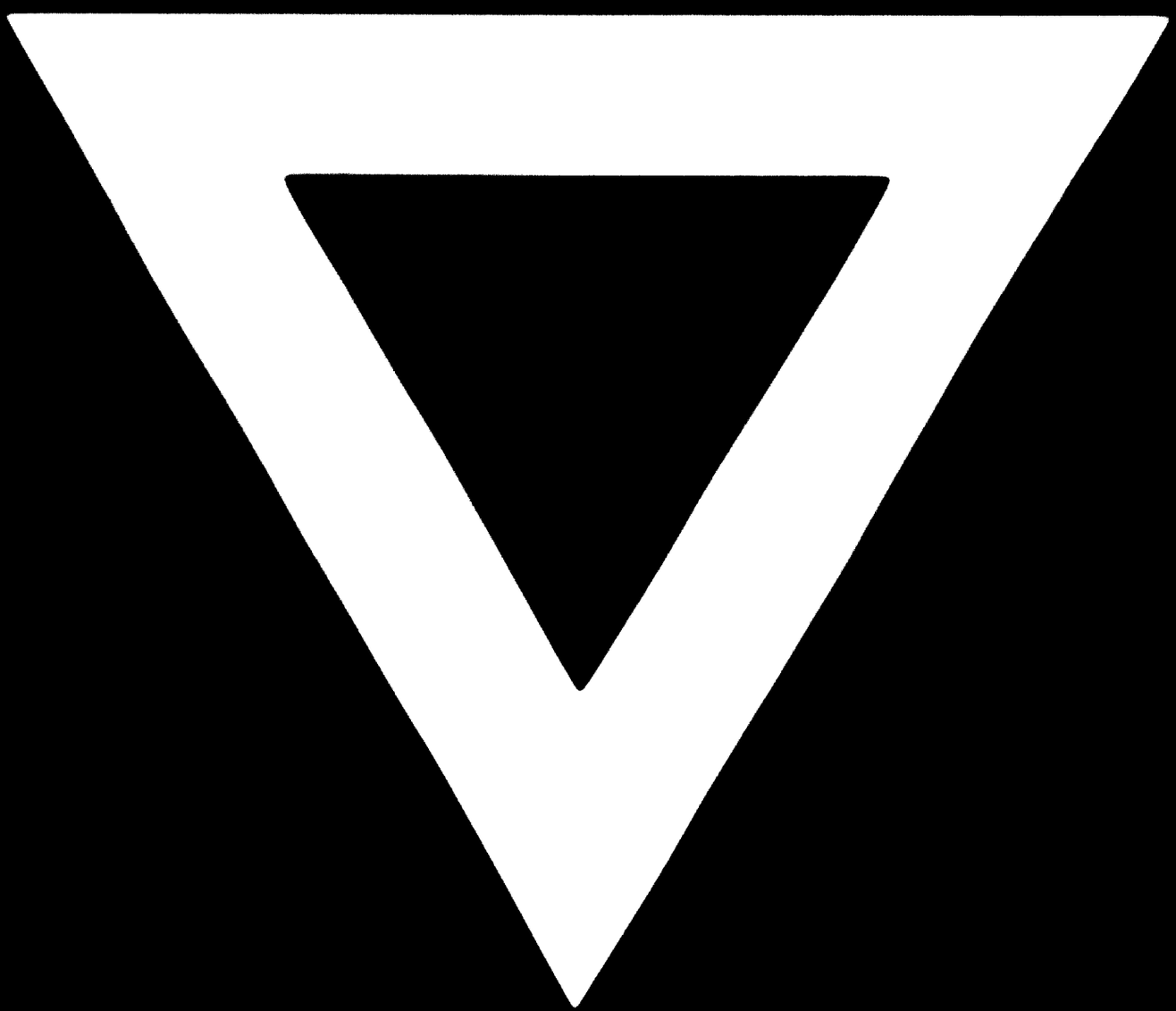

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