List of Annexes

Annex 1 Five Basic Evaluation Components

1 Five Basic Evaluation Components

The five (5) basic evaluation components defined by JICA as mentioned below are in line with those used for the evaluation works by DAC and other international assistance organization. Introduction of these components has enabled a consistent, well-balanced evaluation, which minimizes evaluator bias. Further, it allows us to share the results, knowledge and lessons with other aid organizations, since we are using common components and can discuss with them from the same viewpoints.

(1) Efficiency

Evaluate the method, procedure, term and cost of the project with a view to productivity.

(2) Effectiveness

Evaluate the results in comparison with the goals (or revised ones) defined at the initial or intermediate stage, and evaluate the attributes (factors and conditions) of the results.

(3) Impact

Evaluate the positive and negative effects of the project, extent of the effect and beneficiaries.

(4) Relevance

Preliminary evaluate whether the needs in the country have been correctly identified, and whether the design is consistent with the national and/or master plan.

(5) Sustainability

Evaluate the autonomy and sustainability of the project after the termination of cooperation, from the perspectives of operation, management, economy, finance and technology.

2 Relation between Five Basic Components and PDM

The following five (5) components are used for the evaluation and a selection of a project.

(1) Efficiency
(2) Effectiveness
(3) Impact
(4) Relevance
(5) Sustainability

These components are directly connected to the elements of PDM as shown in the Figure in the following page.

The component "Efficiency" is a measure to qualitatively and quantitatively compare all resource (input) to the results (output)

of the project in order to evaluate the economic efficiency of conversion from input to output.

The parameter "Effectiveness" is a measure to evaluate whether the purpose has been achieved or not, or to evaluate how likely it is to be acheived. In other woeds, it is to evaluate how much the outputs contributed to the achievement of the purpose, or to evaluate whether or not the characteristics of the outputs were as expected.

The parameter "Impact" is a foreseeable or unforeseeable, and a favorable or adverse effect of the project upon society. To evaluate impact, both the goal and project purpose should be referred to in the beginning of the evaluation. Evaluation with this component could requires comprehensive surveys in many cases.

The parameter "Relevance" is to comprehensively evaluate whether or not the project meets the overall goals, politics of both the donor and recipient, local needs and given priority levels, in order to decide whether the project should be continued, reformulated or terminated.

The component "Sustainability" is to comprehensively evaluate how long the favorable effect as a result of the project can continue after the project has been terminated. Evaluation with this component is required to decide how much the local resources should continue to be used for the project, and to evaluate how much the country receiving the assistance has been considering the project important. According to OECD (1989), "Sustainability" is a component to be used for the final test of the success of a development project.

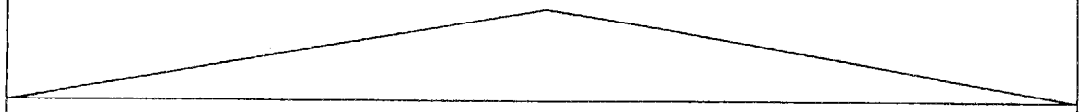
All five components are essential for any of the projects or programs. The five components give necessary information to the decision maker so that he/she can decide how to approach the next step. Since each of the five components build on the elements of the intervention strategy, they also lay foundation for standardization in monitoring and information handling within and among organizations and agencies.

In practice, each of the five parameters should also contain project-specific information.

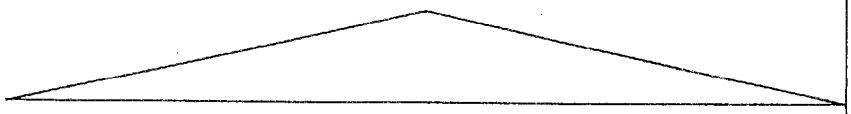
Five Components vs Goal Hierarchy

Evaluation Components

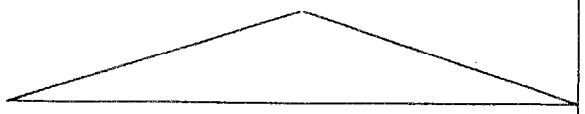
Sustainability:
Evaluate the extent to which the positive effects as a result of the project will still continue after external assistance has been concluded.



Relevance:
Evaluate the degree to which the project can still be justified in relation to the national and regional priority levels given to the theme.



Impact:
Foreseenable or unforeseenable, and favourable or adverse effect of the project upon the target groups and persons possibly affected by the project.



Effectiveness:
Evaluate the extent to which the purpose has been achieved or not, and whether the project purpose can be expected to happen on the basis of the outputs of the project.

Efficiency:
Evaluate how the results stand in relation to the efforts and resources, how economically the resources were converted to the outputs, and whether the same results could have been achieved by other better methods.

Inputs	Outputs	Project Purpose	Overall Goal

Goal Hierarchy

Evaluation Grid (Evaluation Items and Data Sources)

1. Effectiveness

Item	Verification	Information/indicator	Data source											
			Ministry/ Agency	Imple-menting organiza-tion	C/P	Bene-ficiaries	Experts	External organiza-tions	Japan-ese experts	Project records	Annual reports	Staff lists	Post-project survey sheets	Others
1-1 Achievement level of the output (during JICA's assistance)	1) How many C/Ps have been trained during the assistance?	1) Number of trained C/Ps								○				
	2) Have C/Ps improved their ability?	2) Evaluation or reputation by the recipient organization and/or beneficiaries		○		○								
	3) Has the amount of C/Ps' activities increased?	3) (Example: number of jobs in charge, in case of occupational training)		○	○									
	4) Has the quality of C/Ps' activities improved?	4) (Example: satisfaction level of students for C/P's lecture in case of occupational training)		○										
1-2 Achievement level of the project purpose (after JICA's assistance)	1) Has the amount of activities of the recipient organization increased as a result of assistance?	1) (Example: number of training courses being operated in case of occupational training)	○	○										
	2) Has the quality of activities of the recipient organization improved as a result of assistance?	2) (Example: whether or not the training courses being operated are responding to the needs of the beneficiaries in case of occupational training)	○											
	3) What is the favorable or adverse effect of the output upon the achievement of the project purpose (organization reinforcement)?	3) List of favorable/adverse factors affecting the project progression (use the standard form of the list, also describe actual cases)		○										

2. Impact (Indirect Effect, Favorable and Adverse)

Item	Verification	Information/indicator	Data source											
			Ministry/ Agency	Imple-menting organiza-tion	C/P	Bene-ficiaries	Experts	External organiza-tions	Japan-ese experts	Project records	Annual repons	Staff lists	Post-project survey sheets	Others
2-1 How did the project contribute to the development of the sectors assisted?	1) How much did the project contribute to the social and/or economic performance of the sector? How much did the project contribute to the development of the external organizations?	1) Social and economic status of the target group 1) Amount of goods and services from the sector to the external organizations	○					○						
	2) What favorable or adverse factors affecting the development of the sector did the project give?	2) List of favorable/adverse factors affecting the project progression (use the standard form of the list, also describe actual cases		○										
2-2 How much did the project contribute to the development of the project area (and its surrounding)?	1) How much improvement in the social and/or economic performance of the area? How much did the recipient organization cooperate with external organizations?	1) Social and economic status of the target group 1) Amount of goods and services given to the external organizations	○											
	2) What favorable or adverse effects did the project have on the development of the area?	2) List of favorable/adverse effects on project progression (use the standard form of the list, also describe actual cases)		○										
2-3 How much additioned on Spin-off benefits provided by the project?	1) Did the project lead to spin-off (e.g. in terms of technology, institution and environment)?	1) List of favorable/adverse effects on project progression (use the standard form of the list, also describe actual cases)	○											

3. Sustainability

Item	Verification	Information/indicator	Data source											
			Ministry/ Agency	Implementing organization	C/P	Beneficiaries	Experts	External organizations	Japanese experts	Project records	Annual reports	Staff lists	Post-project survey sheets	Others
3-1 Is sustainability of the organization expected?	1) Does the policy support organizational development?	1) Installation related regulations 1) Recent restructuring	○											
	2) Is the recipient organization well-organized for the operation and management of the project?	2) Organization chart									○			
	3) Is the recipient organization well-organized for the implementation of the project?	3) Operation record									○			
	4) Has the recipient organization been supported by external organizations?	4) Assistance (finance, human resources, administrative support) by external organizations						○						
3-2 Is financial sustainability expected?	1) Is funding (operation and management cost) adequate?	1) Funding (operation and management cost) sources 1) Accounting (fund use) status									○			
	2) Are the public subsidiaries stable?	2) Funding (operation and management cost) sources 2) Accounting (fund use) status									○			
	3) Has his owned capital, if available, been appropriated to the project?	3) Funding (operation and management cost) sources 3) Accounting (fund use) status									○			
3-3 Is material/-technical sustainability expected?	1) Have the given technologies been used?	1) Status of the business using the technologies		○	○						○			
	2) Have domestic human resources been allocated appropriately?	2) Staff member lists of the recipient organization during and after the assistance										○		
	3) Have the facilities, equipment and material been stored correctly?	3) Maintenance of facilities, equipment and materials 3) Equipment failure rates 3) Arrangement for maintenance and replacement			○									
3-4 Others														

4. Relevance

Item	Verification	Information/indicator	Data source											
			Ministry/ Agency	Implementing organization	C/P	Beneficiaries	Experts	External organizations	Japanese experts	Project records	Annual reports	Staff lists	Post-project survey sheets	Others
4-1 Was the agreement with the country (and R/D) adequate?	1) Was the project purpose in R/D stated adequately?	1) List of favorable/adverse factors affecting the project progression (use the standard form of the list, also describe actual cases)	○	○	○									
4-2 Did JICA identify needs correctly?	1) How well did JICA identify the favorable/adverse factors affecting the project progression at the stage of preliminary survey?	1) List of favorable/adverse factors affecting the project progression (use the standard form of the list, also describe actual cases)			○									○ Preliminary survey reports
	2) Did JICA identify the urgency and priority levels of the project at the stage of preliminary survey?	2) Project implementation plan (as a background of the project) defined by the country, and its change		○	○									
	3) Was the decision of giving assistance adequate?	3) List of favorable/adverse factors affecting the project progression (use the standard form of the list, also describe actual cases)	○	○	○									
4-3 Was the process for designing the assistance scheme adequate?	1) Was the output goal adequate?	1) Number of trained C/Ps 1) Technical items transferred to C/Ps		○	○									
	2) Was the project purpose adequate?	2) Status of the activities of the recipient organization		○										
	3) Were the project details (development items, project purposes, correlation between input and output) adequate?	3) List of favorable/adverse factors affecting the project progression (use the standard form of the list, also describe actual cases)		○										
	4) Were the input items (kinds, quantity, quality and function) adequate?	4) Same as (1) through (5) in the table 5. Efficiency								○				
	5) Has JICA identified the cooperation system/organization of the recipient country?	5) List of favorable/adverse factors affecting the project progression (use the standard form of the list, also describe actual cases)		○										
4-4 Was the time schedule of the project adequate?	1) Was the time schedule of the project adequate?	1) Time schedule 1) List of favorable/adverse factors affecting the project progression (use the standard form of the list, also describe actual cases)		○										

5. Efficiency (Input vs. Output)

Item	Verification	Information/Indicator	Data source											
			Ministry/ Agency	Implementing organization	C/P	Beneficiaries	Experts	External organizations	Japanese experts	Project records	Annual reports	Staff lists	Post-project survey sheets	Others
5-1 Was the extent of assistance adequate to the development items and project purposes?	1) How many experts were dispatched? How long did they provide assistance at the site?	1) Number of experts and period of assistance								○				
	2) List, quantity, cost and maintenance status of the supplied equipment	2) List, quantity, cost and maintenance of the supplied equipment			○					○				
	3) Number of trainees, and training period	3) Number of trainees, and training period								○				
	4) Was the project completed satisfactorily?	4) Number of discussion meetings and itinerating lectures								○				
	5) What is the total budget of the project?	5) Project funds								○				
5-2 Was the assistance implemented timely?	1) Was the expert dispatch implemented timely?	1) Time schedule of dispatch		○										
	2) Was the equipment and material supplied timely?	2) Time schedule of supply		○	○									
	3) Was the training (receiving trainees) implemented timely?	3) Time schedule of training		○	○									
	4) Were the meetings and itinerating lectures implemented timely?	4) Time schedule and number of meetings and itinerating lectures		○	○									
	5) Was the project implemented timely as a whole?	5) Master schedule of the project	○	○	○									
5-3 Was JICA's assistance for the project adequate?	1) Did the joint committee function properly?	1) Number of joint committee meetings 1) Authority given to the joint committee		○	○									
	2) Was the project supported by external organizations?	2) Same as 1(4) in the table 3. Autonomous Development						○						

Item	Verification	Information/Indicator	Data source											
			Ministry/ Agency	Implementing organization	C/P	Beneficiaries	Experts	External organizations	Japanese experts	Project records	Annual reports	Staff lists	Post-project survey sheets	Others
5-4 Was the linkage to assistance activities by other bodies adequate?	1) Was the cooperation with other grant assistance agencies, OECF, other countries and international organizations adequate?	1) Assistance for the project by other grant assistance agencies, OECF, other countries and/or international organizations	○	○										
5-5 Were intermediate, at-completion and post-project evaluation results used effectively?	1) Were intermediate and at-completion evaluation results used effectively in designing additional or follow-up assistance?	1) Results and recommendations obtained by intermediate and at-completion evaluation, and items to be covered by follow-up assistance		○								Intermediate and at-completion evaluation reports		○
	2) Were the results of the post-project status survey used effectively in designing the after care plan?	2) Results and recommendations obtained by post-project status survey, and items to be covered by the after care plan		○									○	

6. Feedback of Evaluation Results

Item	Verification	Information/indicator	Data source											
			Ministry/ Agency	Imple-menting organiza-tion	C/P	Bene-ficiaries	Experts	External organiza-tions	Japan-ese experts	Project records	Annual reports	Staff lists	Post-project survey sheets	Others
6-1 Is the after-care necessary?	1) What fields require after-care?	1) List of after-care required items		○										○
	2) What type of after-care (e.g. training, expert dispatch and supply of equipment) is necessary?	2) List of training needs 2) List of technologies whose transfer has not been satisfactory 2) List of equipment to be repaired		○									○	
	3) Application schedule of after-care	3) Priority level of the items to be supported by after-care		○										
6-2 What should be improved to ensure satisfactory assistance?	1) What should be improved or corrected to ensure satisfactory assistance for the project?	1) List of favorable/adverse factors affecting the project progression (use the standard form of the list, also describe actual cases) 1) List of corrective measures	○	○	○									
6-3 What system or process should be improved or corrected?	1) What system or process (e.g. organization, authority and funds) of JICA or other Japanese organizations should be improved or corrected?	1) List of favorable/adverse factors affecting the project progression (use the standard form of the list, also describe actual cases) 1) List of corrective measures against adverse factors	○	○	○									
	2) What system or process (e.g. organization and funds) of the government, implementer and/or external organizations in the assistance-receiving country should be improved or corrected?	2) List of favorable/adverse factors affecting the project progression (use the standard form of the list, also describe actual cases) 2) List of corrective measures against adverse factors	○	○	○									
6-4 What lessons were obtained?	1) What were the favorable/adverse factors affecting the achievement of the project purposes?	1) Same as 2(3) in the table 1. Achievement level		○										
6-5 What recommendations were obtained?	1) What should be taken into consideration in the next assistance for the same field or region?	1) List of recommendations made based on 4(1) in the table 6. Feedback of Evaluation Results		○	○									

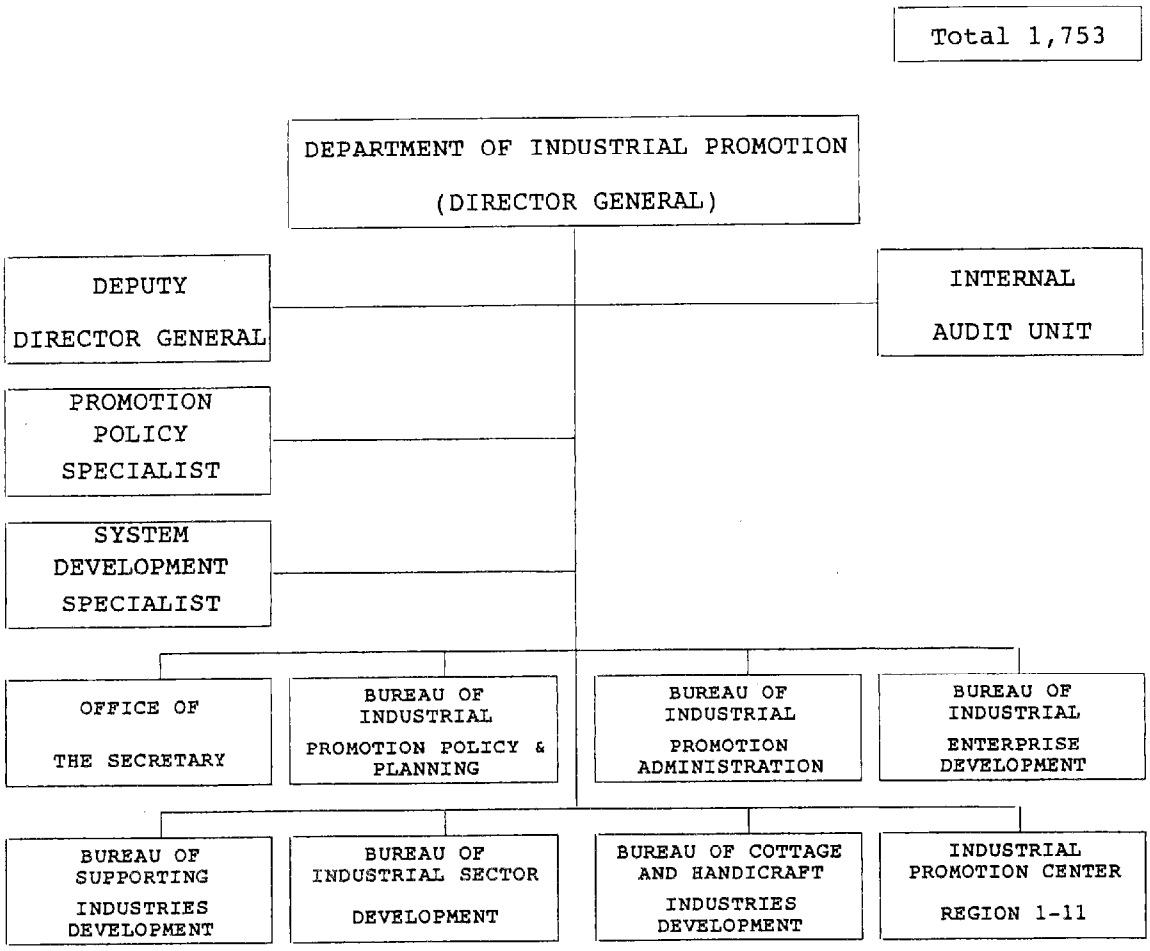
Annex 3 Import & Export of Tool and Mold

	Items	1992		1993		1994		1995		1996		1997(Jan-Jun)	
		Import	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import	Export
1	Dies for drawing or extruding metal (820720)	1,065	237	1,212	370	1,612	246	2,930	294	2,686	439	1,051	186
2	Tools for pressing, stamping or punching (820730)	180	25	181	22	320	14	437	29	263	18	104	11
3	Molding boxes for metal foundry, mold base, molding patterns, molds for metal (other than ingot mold), metal carbides, glass materials, rubber of plastic (84.80)	3,112	397	3,452	564	5,303	536	7,432	807	7,807	827	3,237	395
	Total	4,357	659	4,845	956	7,235	796	10,799	1,130	10,756	1,284	4,392	592

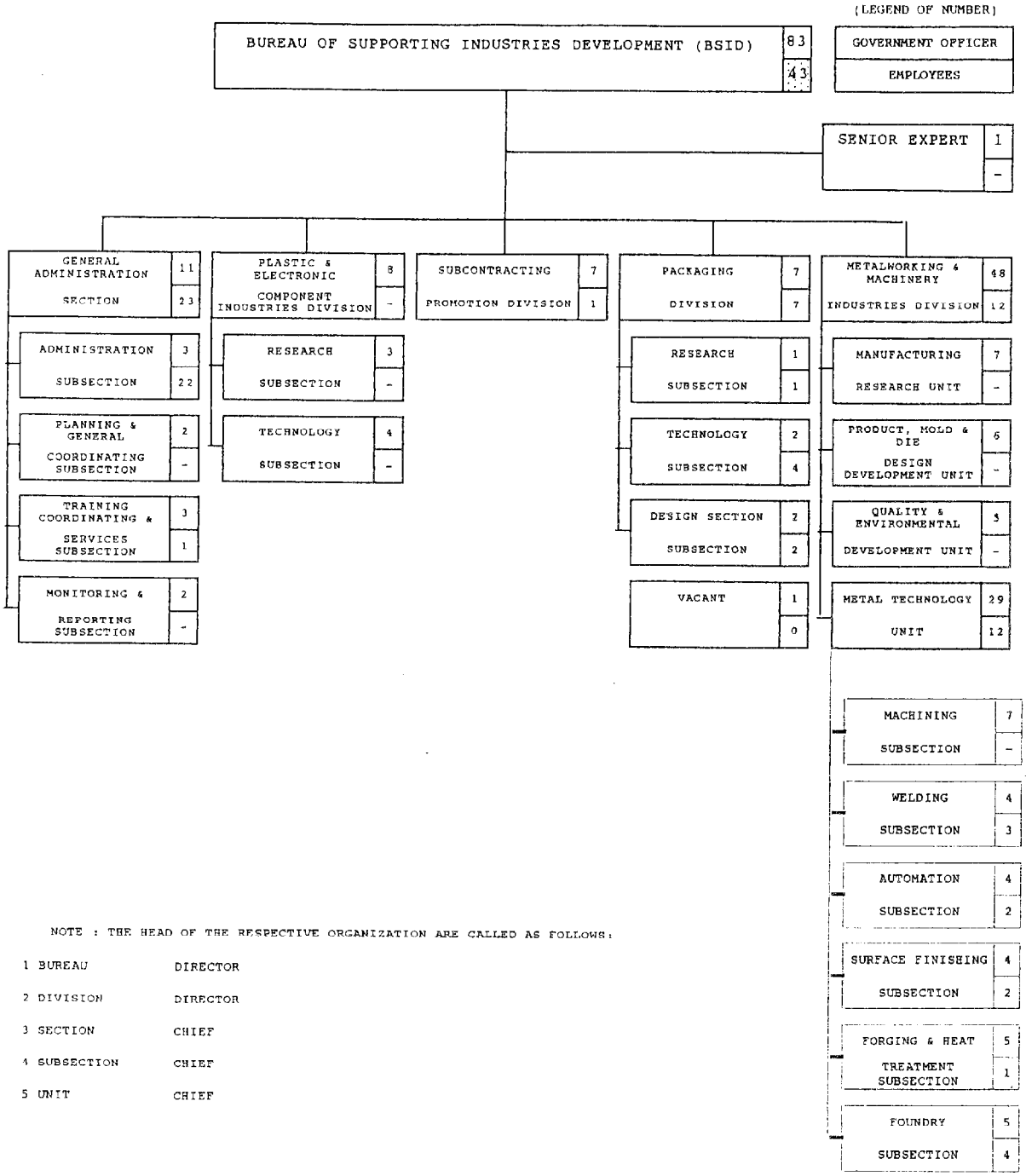
Sourse : Custom Department

Collected data by BSID/DIP

Annex 4-1 Organization Chart of DIP



Annex 4-2 Organization Chart of BSID



NOTE : THE HEAD OF THE RESPECTIVE ORGANIZATION ARE CALLED AS FOLLOWS:

1	BUREAU	DIRECTOR
2	DIVISION	DIRECTOR
3	SECTION	CHIEF
4	SUBSECTION	CHIEF
5	UNIT	CHIEF

Annex 5 Summary of BSID (MIDI)'S Performances and its Income

1 BSID (MIDI) in TOTAL

Activities	1993		1994		1995		1996		1997		1998(Jan-Aug)		Notes
1 Technical Training & Seminars	82	1,600	68	1,625	91	1,638	83	1,913	70	1,526	59	1,054*	* includes the
(1) Regular Course	54	1,193	50	1,324	60	1,069	52	641	41	532	31	397	courses from 1-8
in Bangkok	44	948	35	936	48	832	40	432	25	269	18	135	September 1998
in Provincial Areas	10	245	15	388	12	237	12	209	16	263	13	262	
(2) Courses to support DIP'S													
Program on Skills Reinforcement	7	93	8	129	10	193	10	182	12	130	12	189	
in Bangkok	N.A.	N.A.	7	124	7	107	5	72	6	34	4	37	
in Provincial Areas	N.A.	N.A.	1	5	3	86	5	110	6	96	8	152	
(3) Special Courses	21	314	10	172	21	376	21	1,090	17	864	16	468	(courses/attendees)
2 Technical Information & Advisory Services		903		463		1,122		1,377		338*		264*	* excludes no. of services provided on the phone
3 Machining Center Service	86	N.A.	62	510	31	165	54	N.A.	45	767	65	653	(firms/workpieces)
4 Testing & Inspection Service	186	N.A.	251	2,283	180	1,153	195	1,353	200	1,178	141	706	(firms/workpieces)
Income Return to MOF	279,910.00		378,680.00		420,250.00		484,330.00		376,350.00		175,290.00		

2 Mold & Die

Activities	1993		1994		1995		1996		1997		1998(Jan-Aug)		Notes
1 Technical Training & Seminars	N.A.	N.A.	N.A.	N.A.	17	394	17	392	21	553	9	221*	* includes the
(1) Regular Course	N.A.	N.A.	N.A.	N.A.	12	144	12	142	10	95	6	51	courses from 1-8
in Bangkok	N.A.	N.A.	N.A.	N.A.	12	144	12	142	10	95	4	27	September 1998
in Provincial Areas	N.A.	N.A.	N.A.	N.A.	0	0	0	0	0	0	2	24	
(2) Courses to support DIP'S	N.A.	N.A.	N.A.	N.A.									
Program on Skills Reinforcement	N.A.	N.A.	N.A.	N.A.	0	0	0	0	3	19	0	0	
in Bangkok	N.A.	N.A.	N.A.	N.A.	0	0	0	0	3	19	0	0	
in Provincial Areas	N.A.	N.A.	N.A.	N.A.	0	0	0	0	0	0	0	0	
(3) Special Courses	N.A.	N.A.	N.A.	N.A.	5	250	5	250	8	439	3	170	(courses/attendees)
2 Technical Information & Advisory Services	N.A.	N.A.	N.A.	N.A.		N.A.		N.A.		20*		49*	* excludes no. of services provided on the phone
3 Machining Center Service	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	5	N.A.	16	N.A.	(firms/workpieces)
4 Testing & Inspection Service	N.A.	N.A.	N.A.	N.A.	0	0	0	0	0	0	0	0	(firms/workpieces)

Note

Fee

Technical Training	500-1,000Baht/5days
Seminars	500-1,000Baht/5days
	(in general a little bit expensive than technical training)
Technical Information & Advisory Service	Free
Machining Center Service	300-500Baht/hour
Testing & Inspection Service	100-500Baht/piece

Annex 6 Budget Allocated to BSID (MIDI)

1 MIDI

Items	1991		1992		1993		1994	
	Allocated	Spent	Allocated	Spent	Allocated	Spent	Allocated	Spent
1 Salaries & Wages	3,730,300.00	fully	5,689,400.00	fully	10,193,300.00	fully	11,231,000.00	fully
2 Remuneration, Services other than Personnel and Supplies	2,984,000.00	nil.	4,687,400.00	nil.	4,838,900.00	nil.	7,422,700.00	nil.
3 Equipment, Properties & Construction	51,200.00	fully	231,800.00	fully	3,881,600.00	fully	3,589,000.00	fully
4 Public Utilities	2,004,000.00	fully	2,017,900.00	fully	2,399,000.00	fully	2,423,000.00	fully
5 Other Expenses	235,000.00	fully	-	-	-	-	-	-
Total	11,004,500.00	8,920,500.00	13,625,500.00	8,938,200.00	21,313,200.00	16,474,400.00	24,665,700.00	17,243,000.00

2 BSID

Items	1995		1996		1997		
	Allocated	Spent	Allocated	Spent	Allocated	Spent	Carry-over
1 Salaries & Wages	11,181,900.00	fully	13,329,400.00	fully	13,984,700.00	fully	-
2 Remuneration, Services other than Personnel and Supplies	7,248,700.00	8,040,061.00	7,485,700.00	7,101,738.16	8,129,000.00	8,312,525.00	2,008,057.90
3 Equipment, Properties & Construction	3,159,900.00	fully	12,190,000.00	fully	1,531,000.00	fully	-
4 Public Utilities	2,618,600.00	fully	2,673,000.00	2,834,571.58	2,850,000.00	3,236,271.92	-
5 Other Expenses	-	-	6,450,000.00	fully	6,850,000.00	4,425,685.89	-
Total	26,209,100.00	27,000,461.00	42,128,100.00	42,105,709.94	33,344,700.00	29,490,154.31	2,008,057.90

Items	1998			1999	
	Initial	Reviewed	Spent	Preliminary study	Allocated
1 Salaries & Wages	14,808,900.00	14,808,900.00	fully	16,182,100.00	15,745,100.00
2 Remuneration, Services other than Personnel and Supplies	9,969,870.00	6,990,870.00	6,357,460.00	13,300,000.00	5,898,100.00
3 Equipment, Properties & Construction	2,929,000.00	2,929,000.00	fully	1,035,000.00	No Allocation
4 Public Utilities	2,166,000.00	2,166,000.00	2,123,634.00	2,707,500.00	2,700,000.00
5 Other Expenses	29,289,000.00	10,990,200.00	fully	18,990,000.00	13,550,000.00
Total	59,162,770.00	37,884,970.00	37,209,194.00	54,214,600.00	37,893,200.00

3 SIC Construction

Items	1997		1998		1999		2000	
	Allocated	Spent	Allocated	Spent	Allocated	Spent	Allocated	Spent
Construction	9,600,000.00	fully	34,000,000.00	fully	54,900,000.00	34,000,000.00	15,000,000.00	-
							Total	112,600,000.00
							(estimate)	

Note

1 Composition of Remuneration, Services other than Personnel and Supplies are as follows:

Remuneration	Services other than Personnel and Supplies	Supplies
- Overtime Payment	- Allowances, Accommodations & Transportation	- Office (paper, stationery, etc.)
- Housing	- Vehicle Maintenance	- Fuel & Gasoline
- Honorarium	- Machinery & Equipment Maintenance	- Household Stuff
	- Building Maintenance	- Electrical Accessories
	- Expenses for Service Contracts	- Advertisement & Publications
	- Training & Seminars Expenses	- Educational Materials
	- Expenses for Social Affairs	- Textbooks & Journals
	- Expenses for Taxes & Customs	- Computer (excluding Hardware)

2 The specific reasons for the unique utilization are as follows:

(1) The Equipment, Properties & Construction for 1996
Rapid-prototyping machine was procured.

(2) Carry-over in 1997
Some research was implemented with consecutive two (2) years.

Annex 7 Government Staff Residency in BSID (1998)

Residency	BSID (excluding the Technical Counterpart)					Technical Counterpart		
	Engineer	ITO	Technician	Others	Total	Engineer	Technician	Total
More than 20 years	1	2	8	1	12	0	1	1
16 - 20 years	3	0	2	1	6	1	1	2
11 - 15 years	2	1	0	2	5	1	2	3
06 - 10 years	3	2	4	1	10	1	5	6
00 - 05 years	8	2	13	6	29	1	0	1
Total	17	7	27	11	62	4	9	13

Note

1 The above mentioned figure excludes the Director of BSID.

2 The following four (4) persons moved to the other divisions/bureaus.

(1) Mr. Warapong (tech.) (Metalwroking & Machinery Division)

(2) Mr. Puwanai (tech.) (Plastic Division)

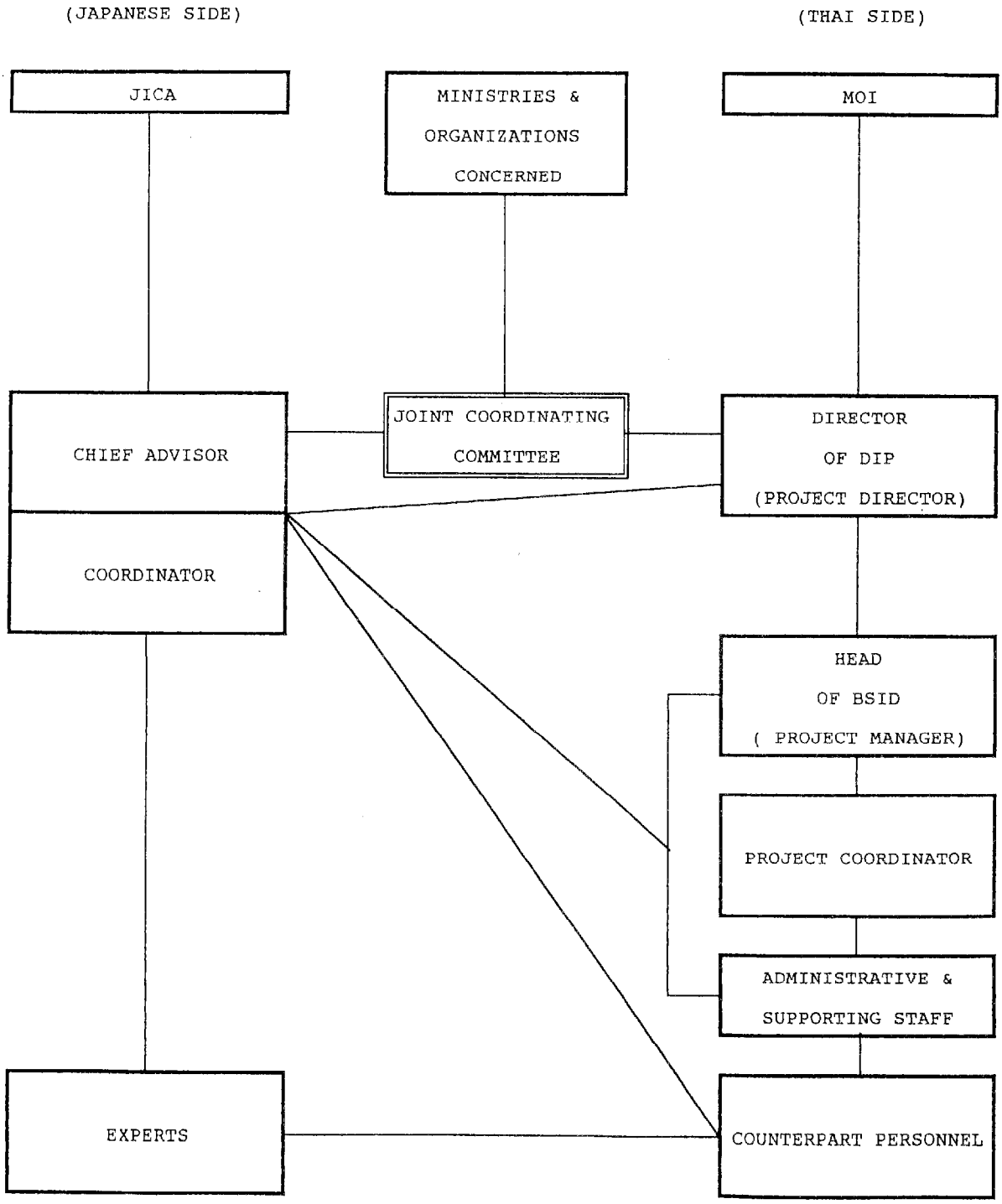
(3) Ms Supa (other), Mr. Udorn (Administration)

3 There is one (1) vacant position in Subcontracting Division.

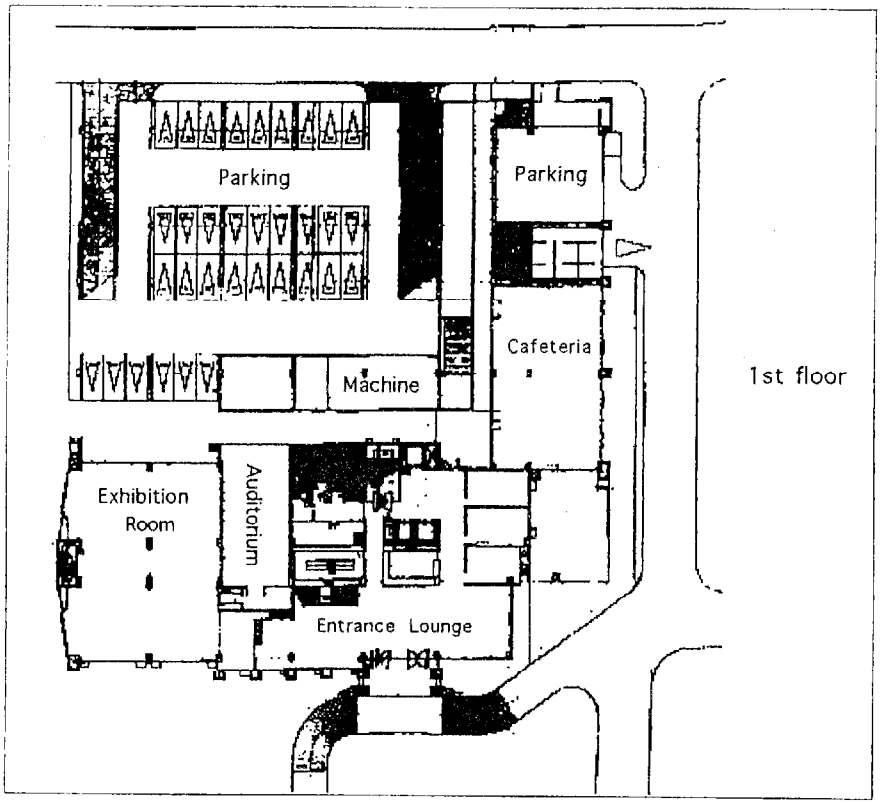
4 There are two (2) persons studying abroad as a scholarship

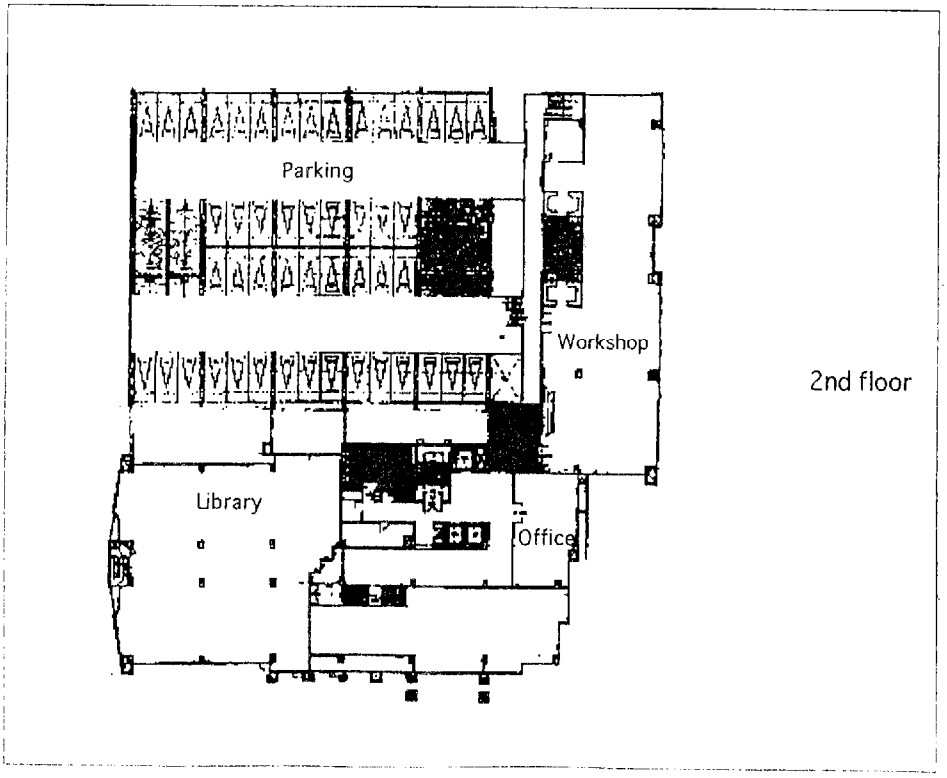
- Ms. Kun, Ms Wanida (engineer) (Metalworking & Machinery Division)

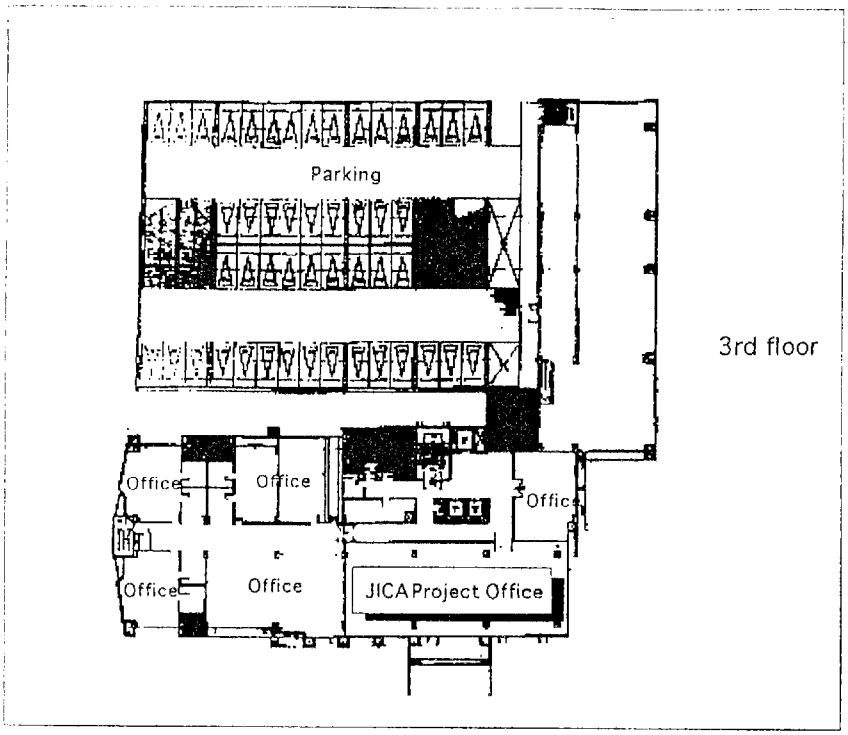
Annex 8 The Provisional Organization Chart for the Administration of the Project



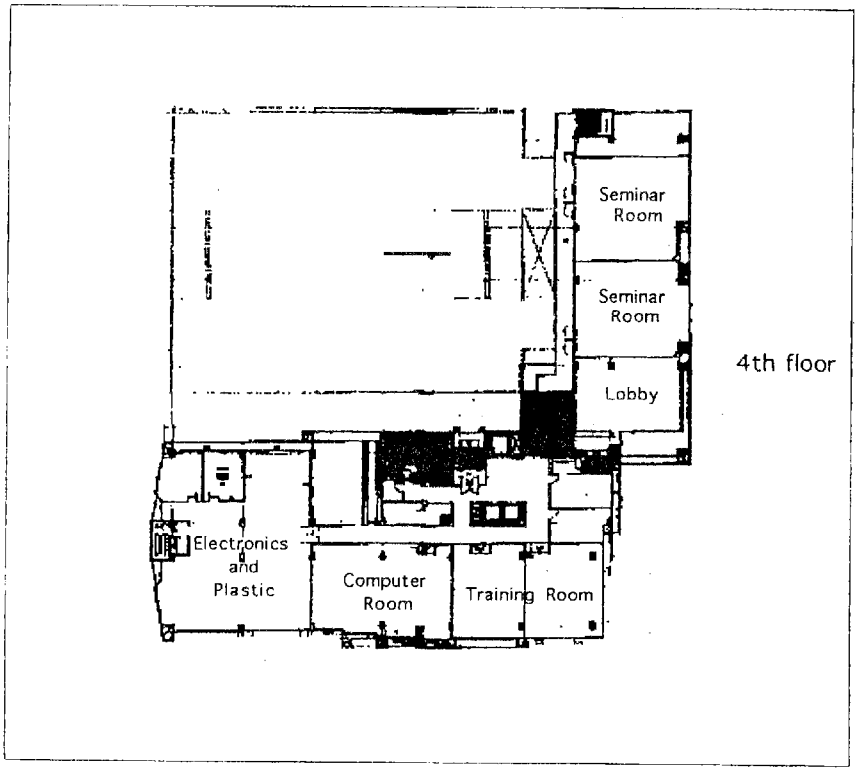
Annex 9 The Present Floor Plan of SIC



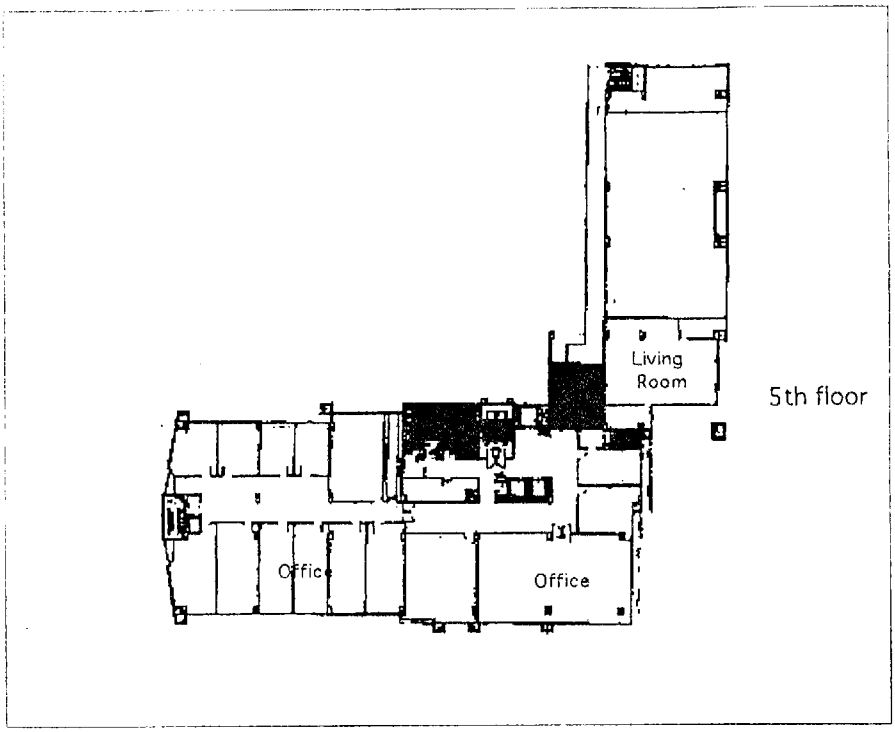


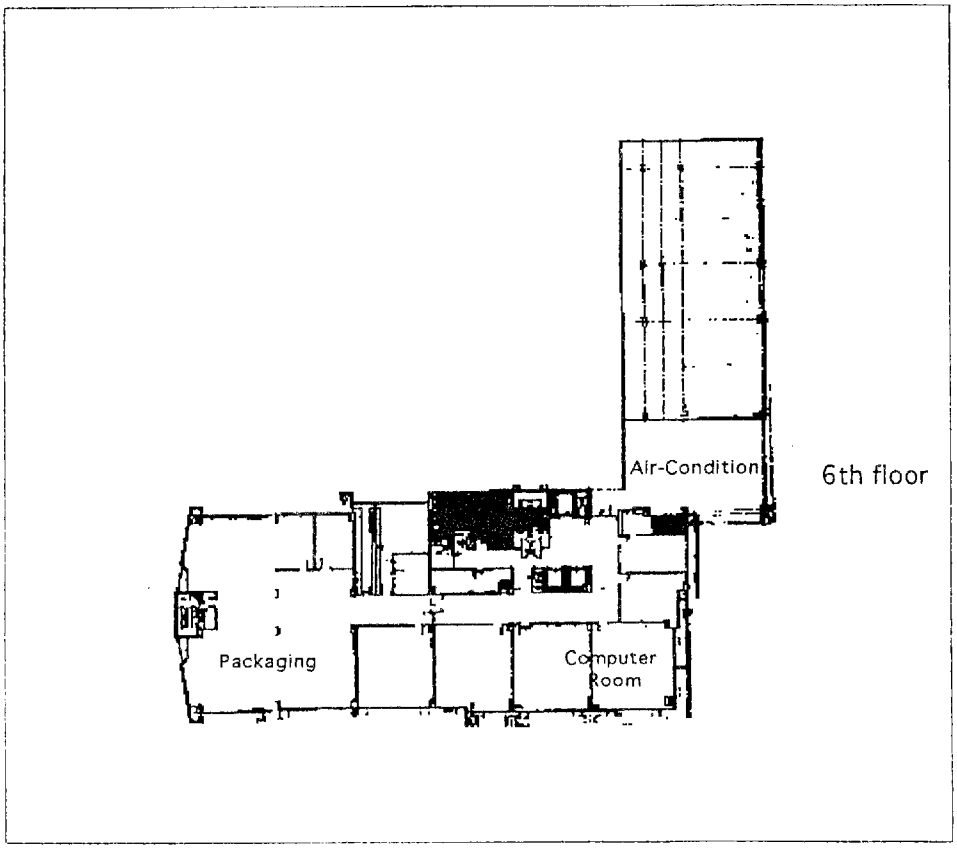


3rd floor



4th floor

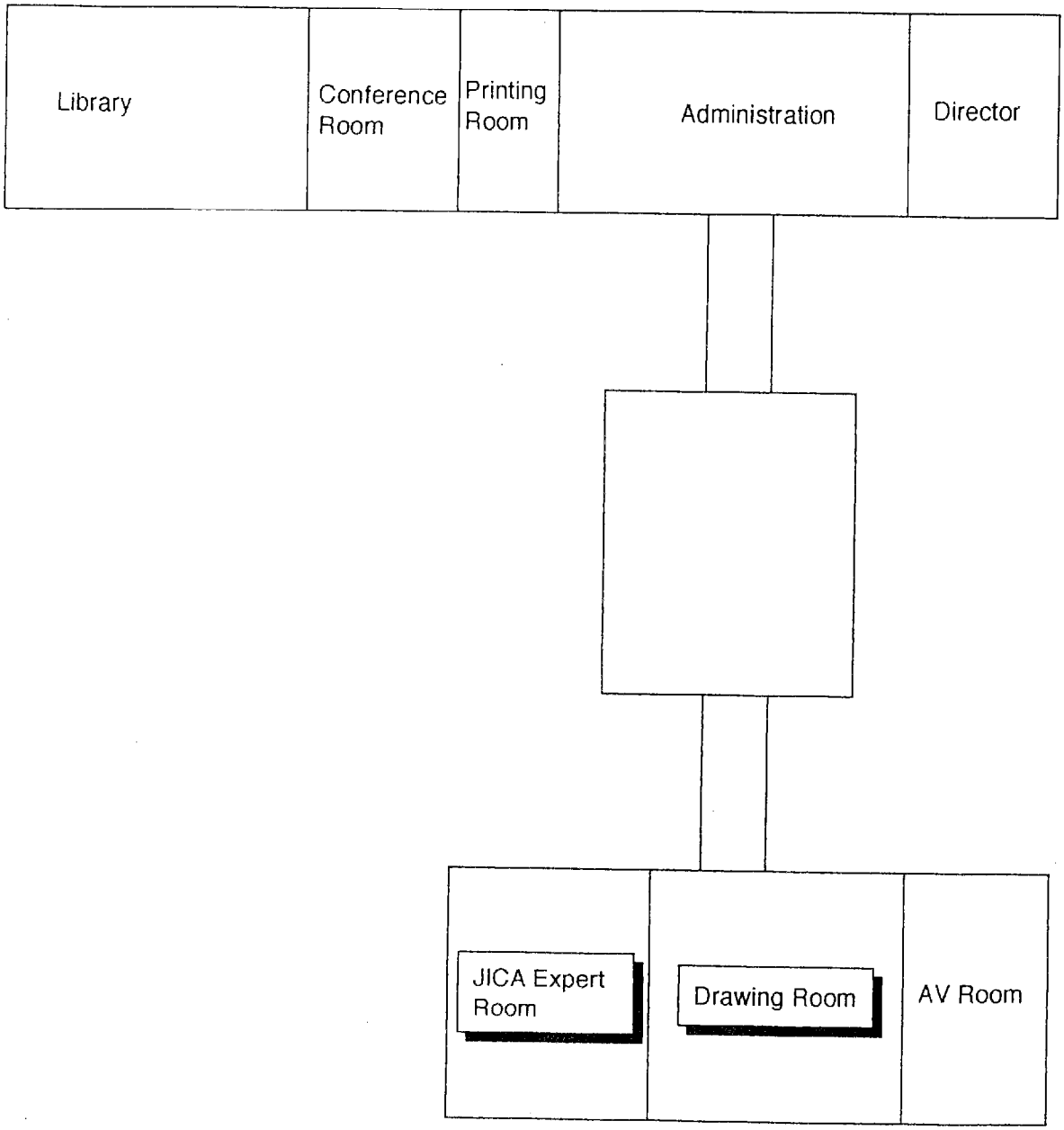

Living
Room
5th floor
Office
Office


Air-Condition
6th floor
Packaging
Computer
Room

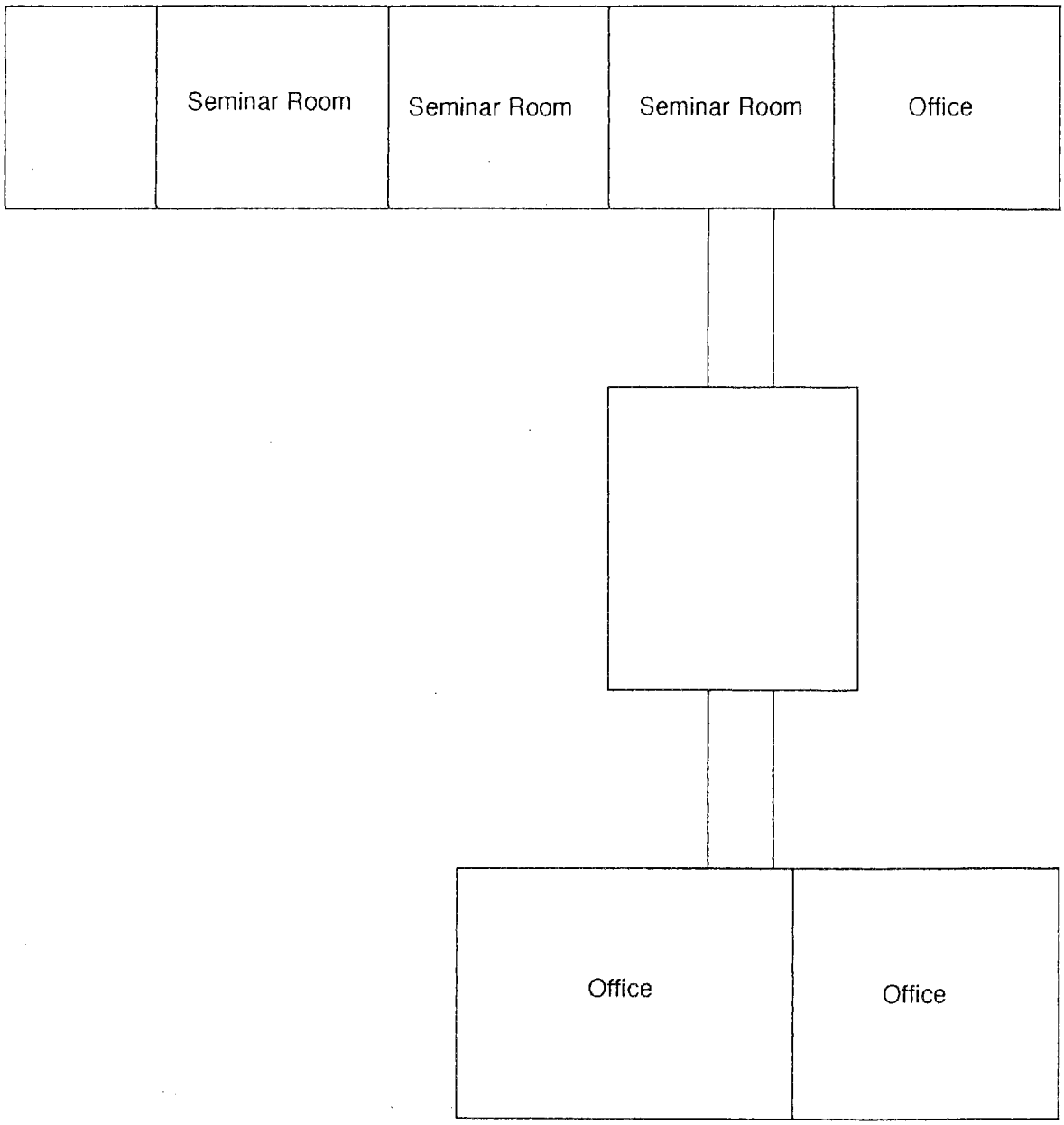
Annex 10 The Construction Schedule of SIC

Annex 11 Present Floor Layout of BSID
(Main Building)

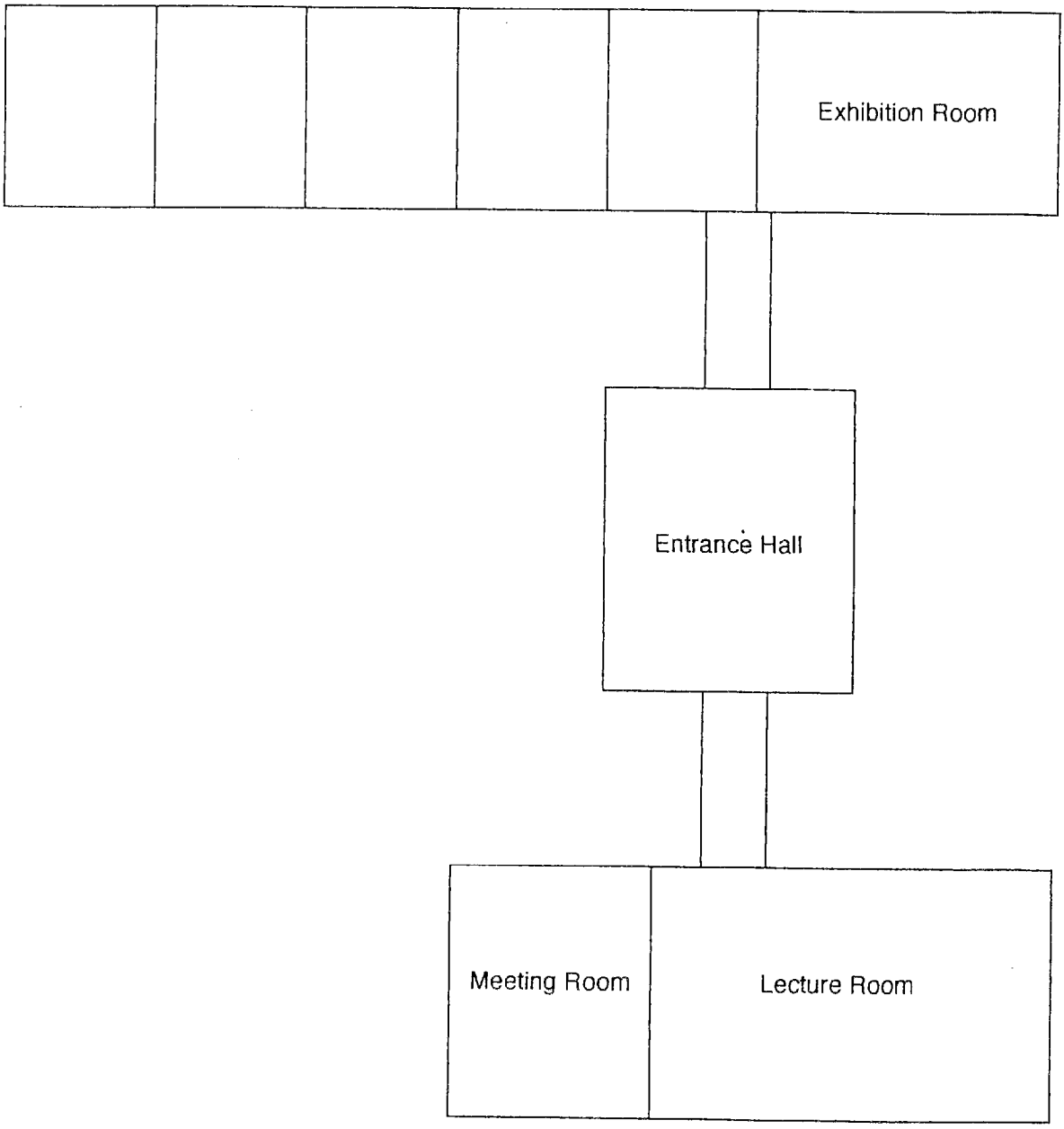
Third Floor



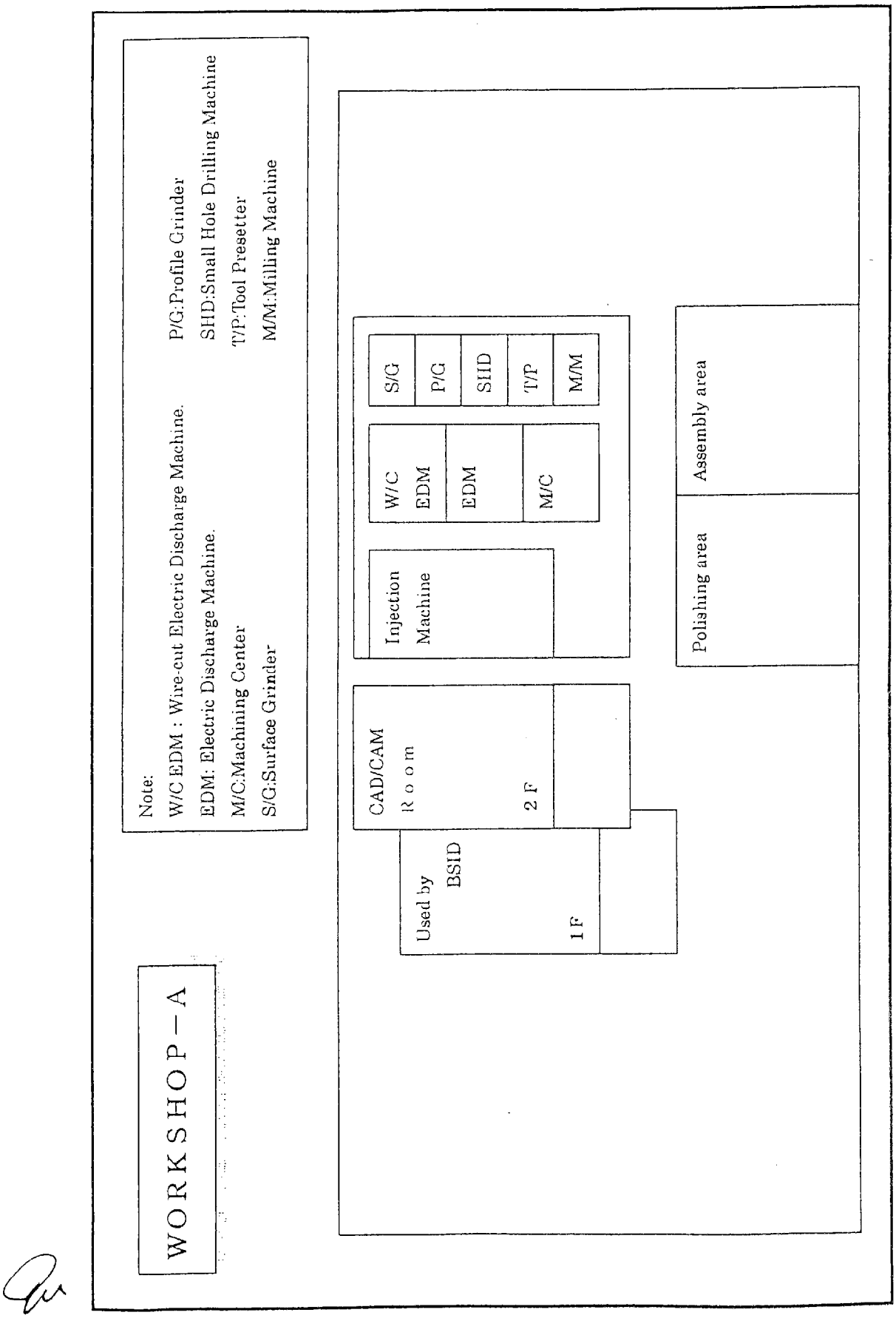
Second Floor

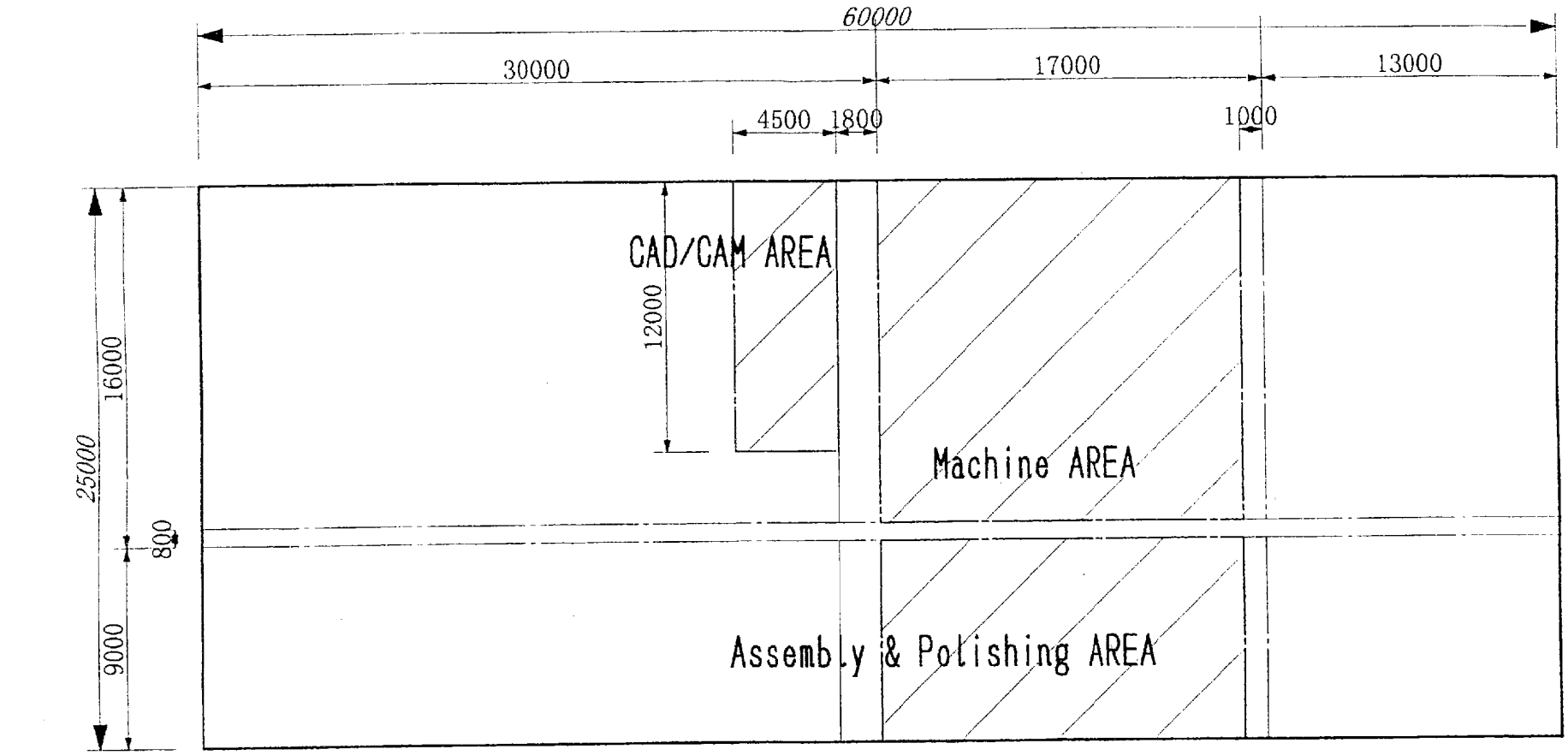


Ground Floor

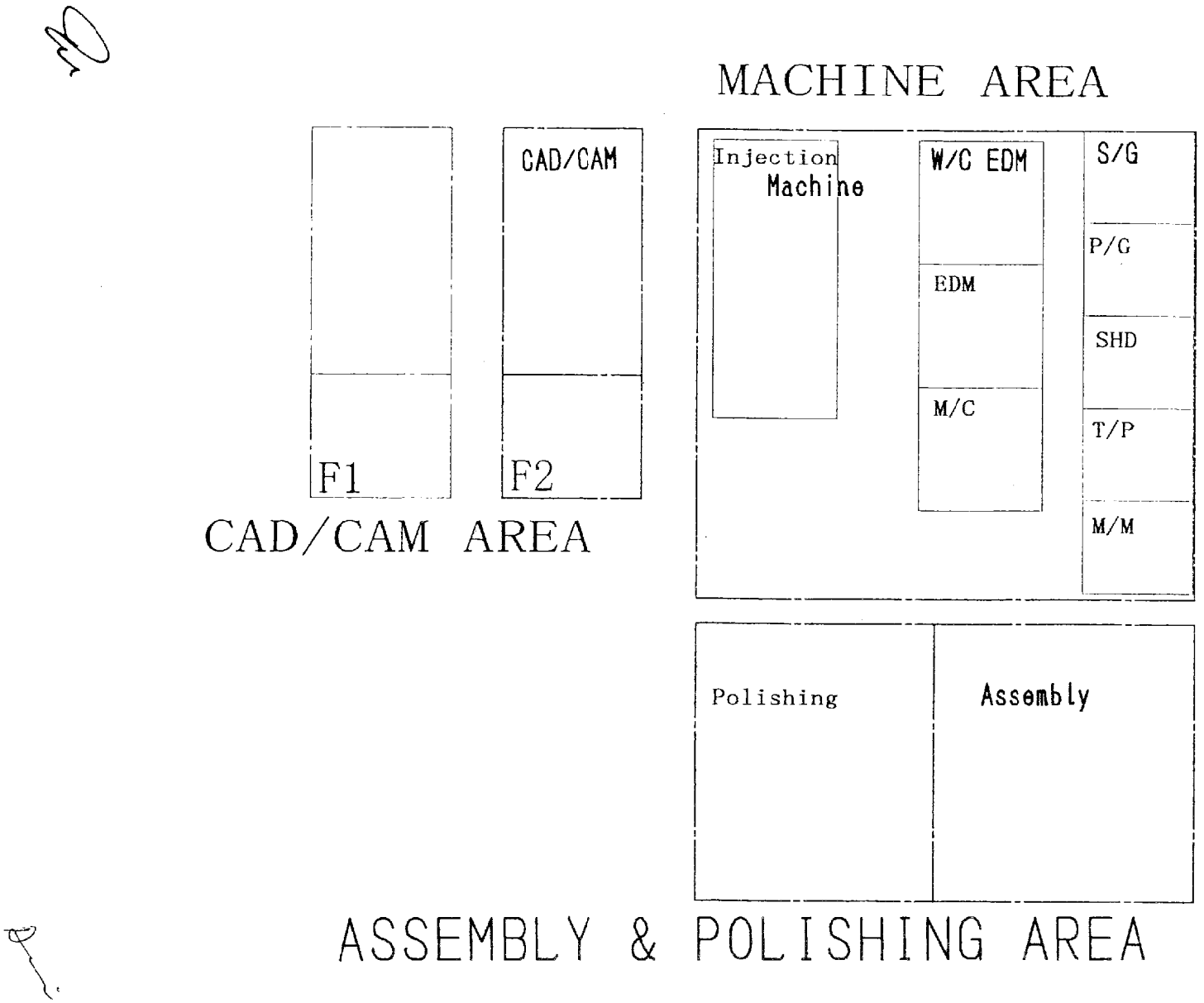


Annex 12 The Draft Layout of Machinery and Equipment in the Workshop A

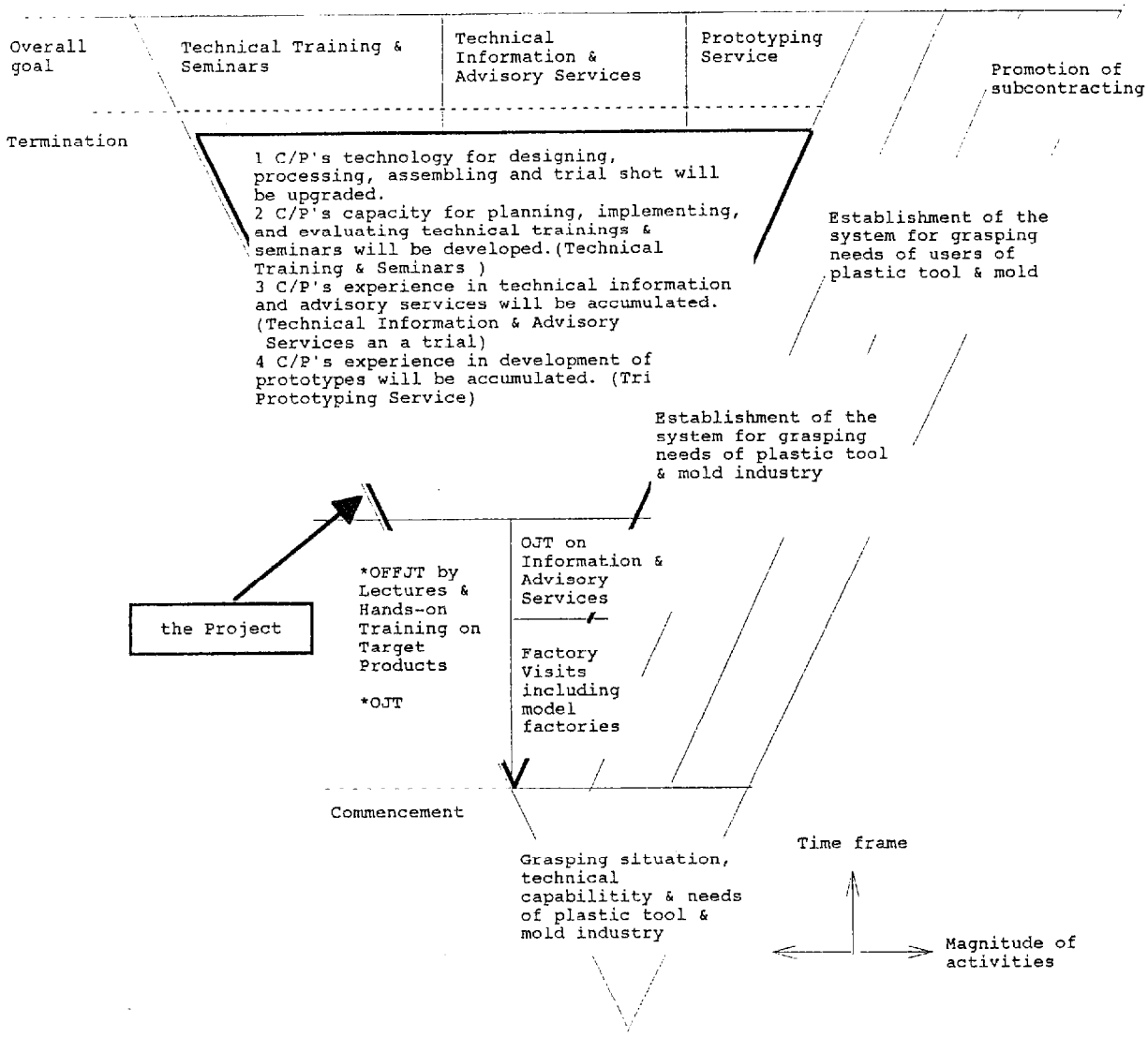




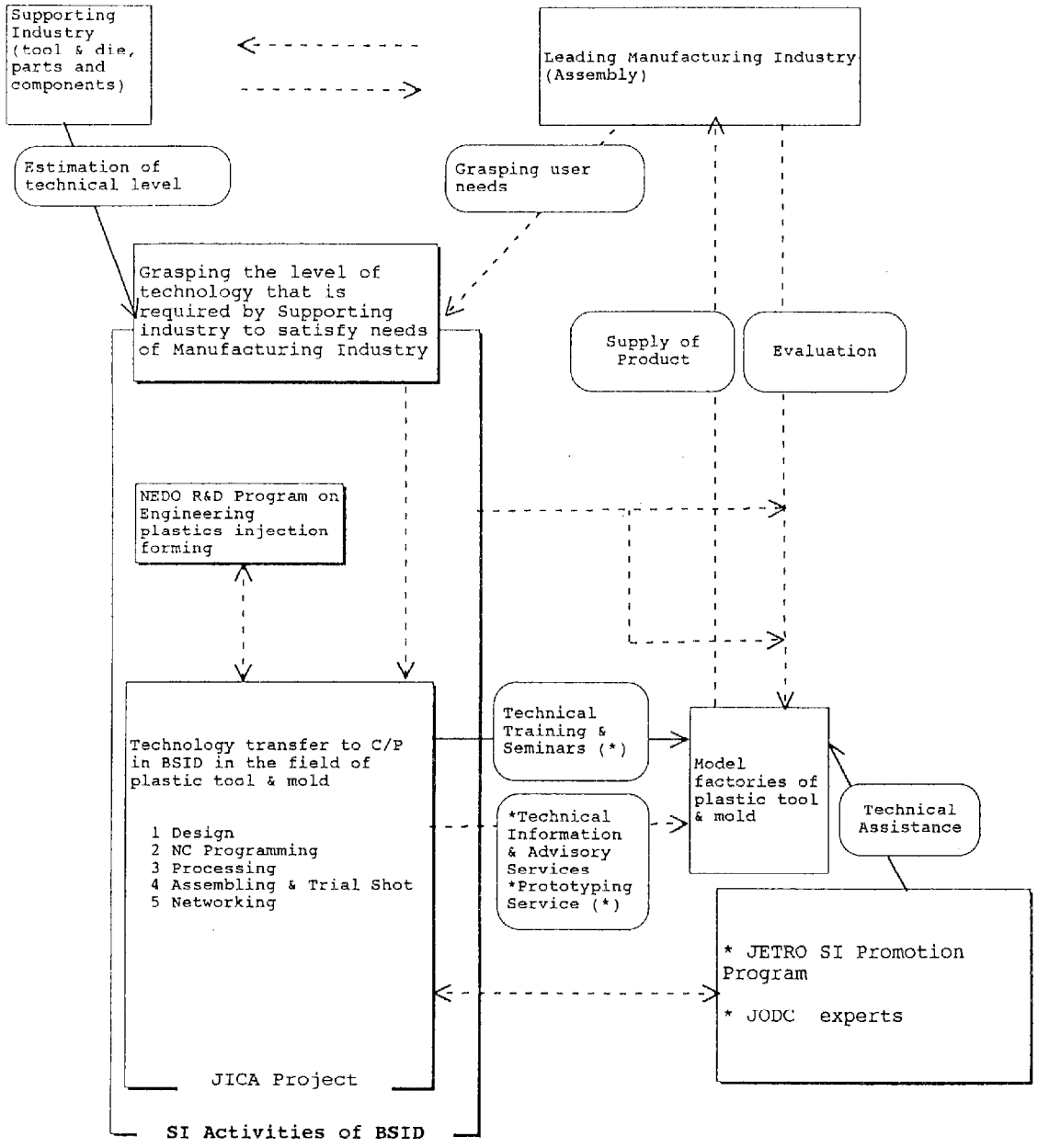
Layout of WORKSHOP-A (S=1/300)


MACHINE AREA
CAD/CAM
F1
F2
CAD/CAM AREA
Injection
Machine
W/C EDM
EDM
M/C
S/G
P/G
SHD
T/P
M/M
Polishing
Assembly
ASSEMBLY & POLISHING AREA

Annex 13 Provisional Conceptual Image of BSID Activities for Upgrading Technology of Tool & Mold Industry in the Kingdom of Thailand



Annex 14 Provisional Cycle of SI Activities to be strengthened by BSID



Note 1 The legend for the arrow is as follows:

- - - -> currently not existing

——> currently existing to be strengthened

2 The services extended by the Project, which are with asterisk (*), will be provided not only to the model factories but also to any local industry, once applied in principle.

3 The above-mentioned chart can not represent the relationship among cycle of SI activities to be strengthened by BSID, for example, the one with industrial association, academy, institute like TGI and so on, because of the space constraints.

Annex 15 Provisional Project Design Matrix (PDM) of SIC-Tool and Mold Technology Development in the Kingdom of Thailand

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumption
(Overall Goal) The plastic tool and mold manufacturers in the Kingdom of Thailand will be able to provide domestic assembly industries with tool and mold to meet their quality level.	1 Increase of products delivered to assembly industries 2 Improvement of quality of products 3 Improvement of Productivity and Efficiency	1-1 Industrial Statistic 1-2 Survey Report 2 Survey Report 3 Survey Report	a There is no drastic change in political and ecnomic situtation in the Kingdom of Thaikand. b Supporting industries development policy will continue to be stable. c Demand from assembly industries for plastic tool and mold industry will continue to be stable.
(Project Purpose) Technical services for plastic tool and mold industries extended by BSID will be improved.	1 Level of satisfaction of present and former sercice beneficiaries 2 Level of satisfaction of industries 3 Number of newly improved services and target group	1, 2 Quwstionnaire to and interview with related industries 3 BSID Record	a Thai plastic tool and mold industries will utilize the technology obtained from BSID. b Linkage between assembly industry and plastic tool and mold industry will be established..
(Outputs of the Project) 0 The operation unit will be enhanced.	0 Number and capacity of staff, Budget and settlement account,Number of committee and meeting,Number of publicity	0 Organization Chart, Administration Record, Accounting Record, Personnel record	a Trained C/P will remain at BSID.
1 The necessary machinery and equipment will be provided, installed, operated and maintained properly.	1-1 Contents and condition of machinery and equipment 1-2 Route to get spare parts and situation to secure spare parts	1-1 Property record, operation & maintenance record 1-2 Spare parts list, suppliers list	
2 Technical capability of the C/P will be upgraded.	2-1 Assessment by the Japanese experts 2-2 Number of achieved Target Product 2-3 Manuals, textbooks and training materials developed	2-1, 2-2, 2-3 BSID record	
3 Technical training and seminars will be implemented systematically.	3 Number of implemented technical training and seminars, their textbooks and their participants	3, 4, 5 BSID record	
4 Technical information and advisory services as a trial will be implemented systematically.	4 Number of implemented trial technical information and advisory services including complied information and their clients		
5 Trial prototyping Service will be implemented systematically.	5 Number of implemented Trial prototyping and its clients		

(Activities)	Inputs		a C/P will remain at BSID.
0-1 Allocate necessary personnel. 0-2 Formulate plans of activities. 0-3 Make budget plan and execute properly. 0-4 Establish and operate management system. 1-1 Make facility refurbishment plan and implement as planned. 1-2 Provide and install machinery and equipment. 1-3 Operate and maintain machinery and equipment properly. 2-1 Make Technical Cooperation Program. 2-2 Implement technology transfer to the C/P. 2-3 Evaluate result of implementation of technology transfer to the C/P. 3-1 Make plan of technical training and seminars. 3-2 Implement technical training and seminars. 3-3 Evaluate technical training and seminars. 4-1 Make plan of technical Information and advisory services. 4-2 Collect and compile technical information and material. 4-3 Implement technical information and advisory services. 4-4 Evaluate technical Information and advisory services. 5-1 Make plan of prototyping service. 5-2 Implement prototyping service. 5-3 Evaluate prototyping service.	The Thai side	The Japanese side	(Preconditions) a Construction of SIC building will be completed as shceduled.
	1 Provision and Maintenance of Building and Facilities	1 Dispatch of Japanese Experts (1) Long-term Experts a Chief adviser b Coordinator c Plastic Tool and mold (2) Short-term Experts Appropriate number of short-term experts will be dispatched as necessity arises	
	2 Allocation of C/P and Administrative personnel (1) Administrative C/P 4 (2) Technical C/P 14 at the commencement (3) Administrative Staff Necessary number (4) Supporting Staff a Secretary 2 b Driver 1 c Other necessary staff upon request by the Japanese experts	2 Thai C/P Training in Japan A certain number (about 2 persons) of the C/P yearly	
	3 Provision of Machinery & Equipment and their Maintenance	3 Provision of Machinery and Equipment	
	4 Local Cost Necessary budget for the implementation of the Project	4 Supporting Local Cost	

Annex 16 Tentative List of the C/P and Administrative Personnel

1 Counterpart Personnel

(1) Project Director
Director General, DIP

(2) Project Manager
Director, BSID

(3) Project Coordinator
Director, Plastic & Electronic Component Industries Division
Director, Metalworking & Machinery Industries Division
Chief, Research Section, Plastic & Electronic Component Industries Division

(4) Technical Counterpart Personnel

a Design Group
- Mr. Prakob Janma
- Mr. Worapong Chinchoksakulchai
- Mr. Chanon Suktayu
- Mr. Chairat Keawdoung
- Mr. Sompong Teeracanont
- Mr. Preecha Jamtath

b Processing Group
- Mr. Paiboon Tekapan
- Mr. Satta Denpradith
- Mr. Paisal Lhokaew
- Mr. Damrong Kratumkhetr
- Mr. Sahas Chumsoongnoen
- Mr. Bantao Wongprachanukul
- Mr. Sirisak Ritngam

2 Administrative Personnel

(1) Public Relation
Chief, General Administration Section

(2) Administration
Chief, General Administration Section

(3) Printing
Chief, General Administration Section

(4) Training
Chief, Training & General Coordinating Subsection
Chief, Monitoring and Reporting Subsection

3 Supporting Staff

(1) Secretary 2
(2) Driver 1

Note:
1 Allocation of other staff such as skilled workers will be consulted with the Japanese experts upon request.
2 Reorganization of the technical C/P before the commencement of the Project is required.

Annex 17 Tentative Schedule of the C/P Allocation

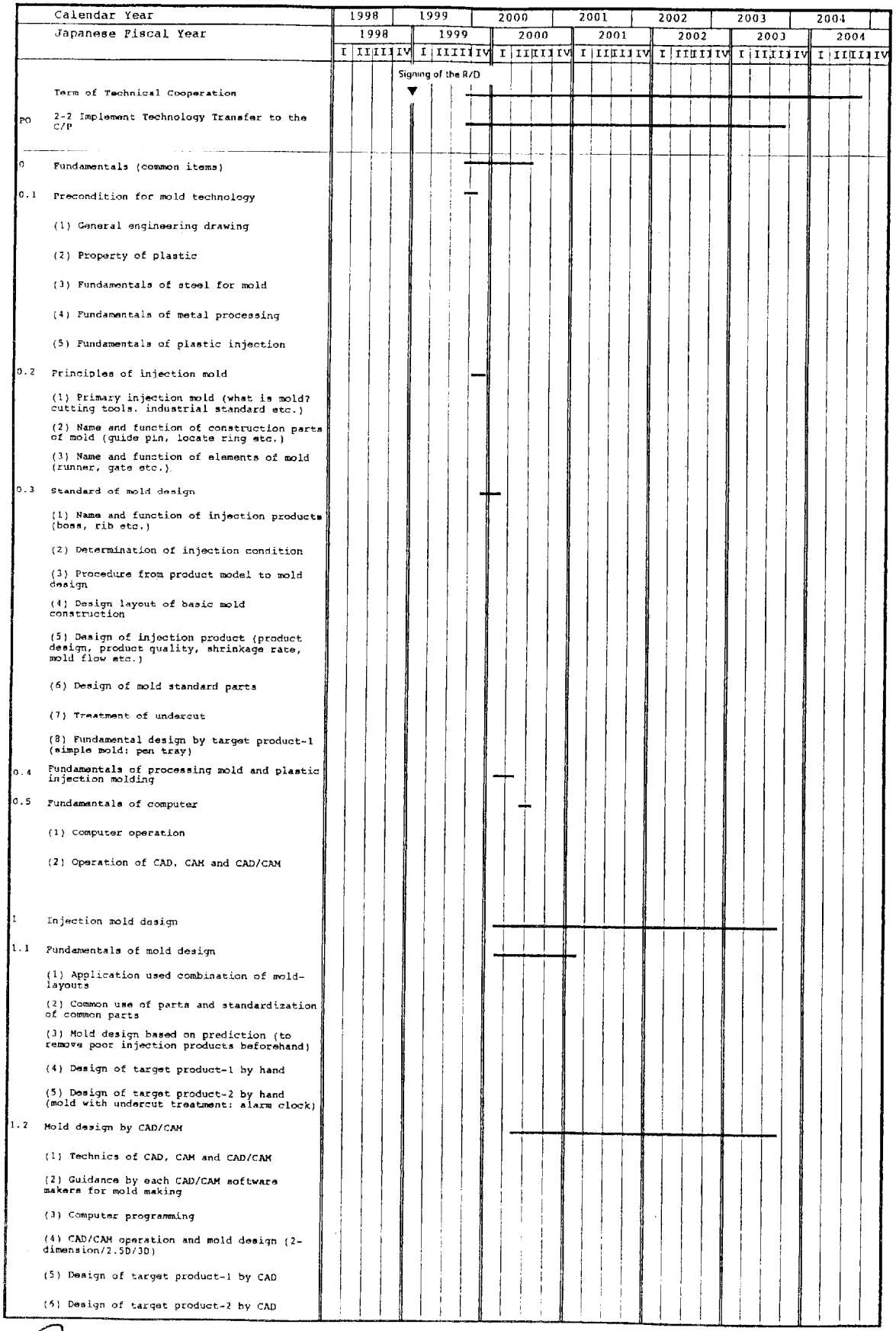
	1998		1999	2000	2001	2002	2003	2004
	Preliminary	Supplementary						
Design		(1)	(-3)	(0)	(0)	(0)	(0)	(0)
	5	6	3	3	3	3	3	3
NC Programming		(0)	(3)	(1)	(0)	(0)	(0)	(0)
	-	-	3	4	4	4	4	4
Processing		(1)	(-3)	(2)	(0)	(0)	(0)	(0)
	6	7	4	6	6	6	6	6
Assembling		(0)	(3)	(0)	(0)	(0)	(0)	(0)
& Trial Shot	-	-	3	3	3	3	3	3
Networking		(0)	(1)	(0)	(0)	(0)	(0)	(0)
	-	-	1	1	1	1	1	1
Total	(0)	(2)	(1)	(3)	(0)	(0)	(0)	(0)
	11	13	14	17	17	17	17	17

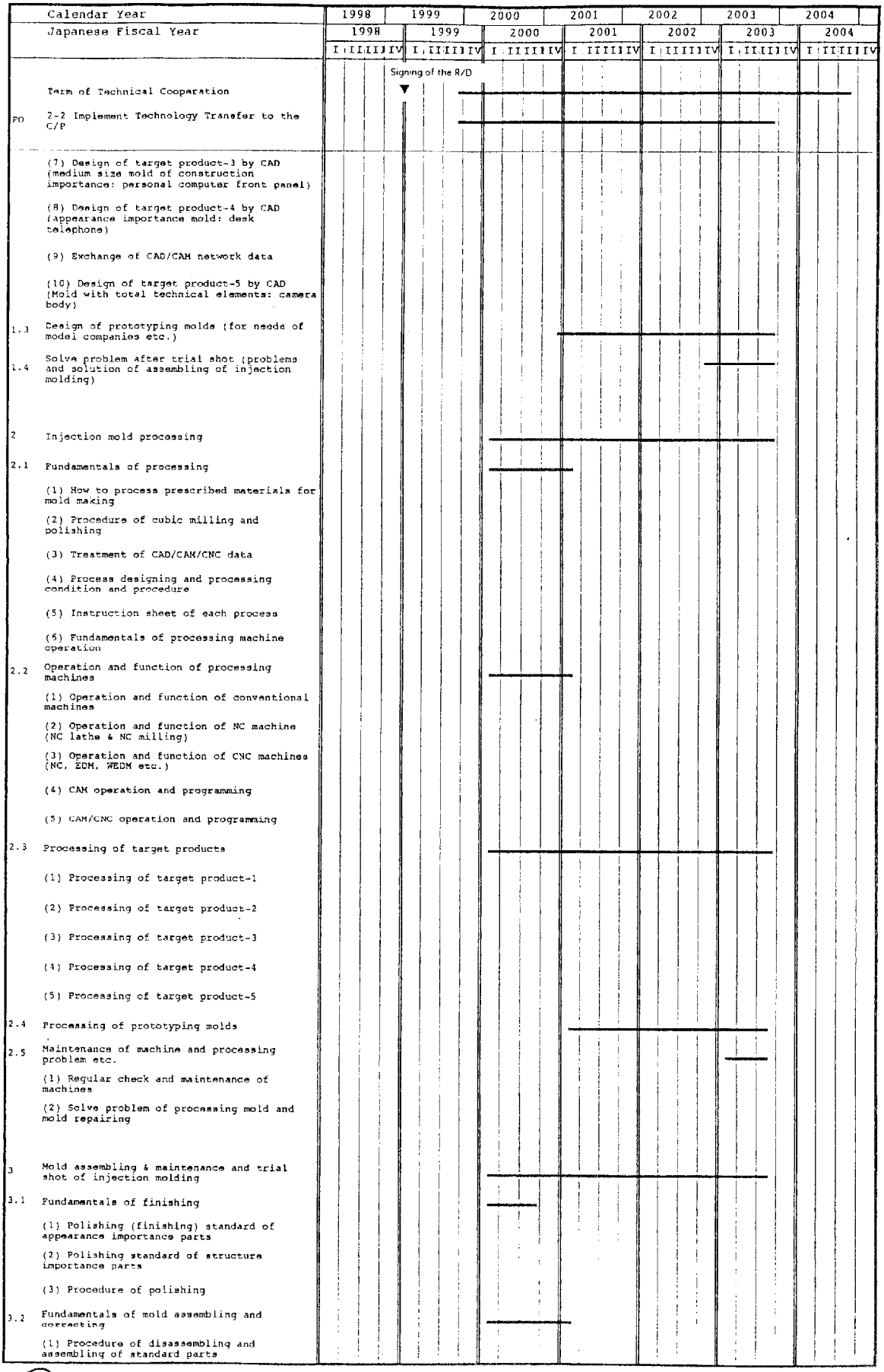
Note

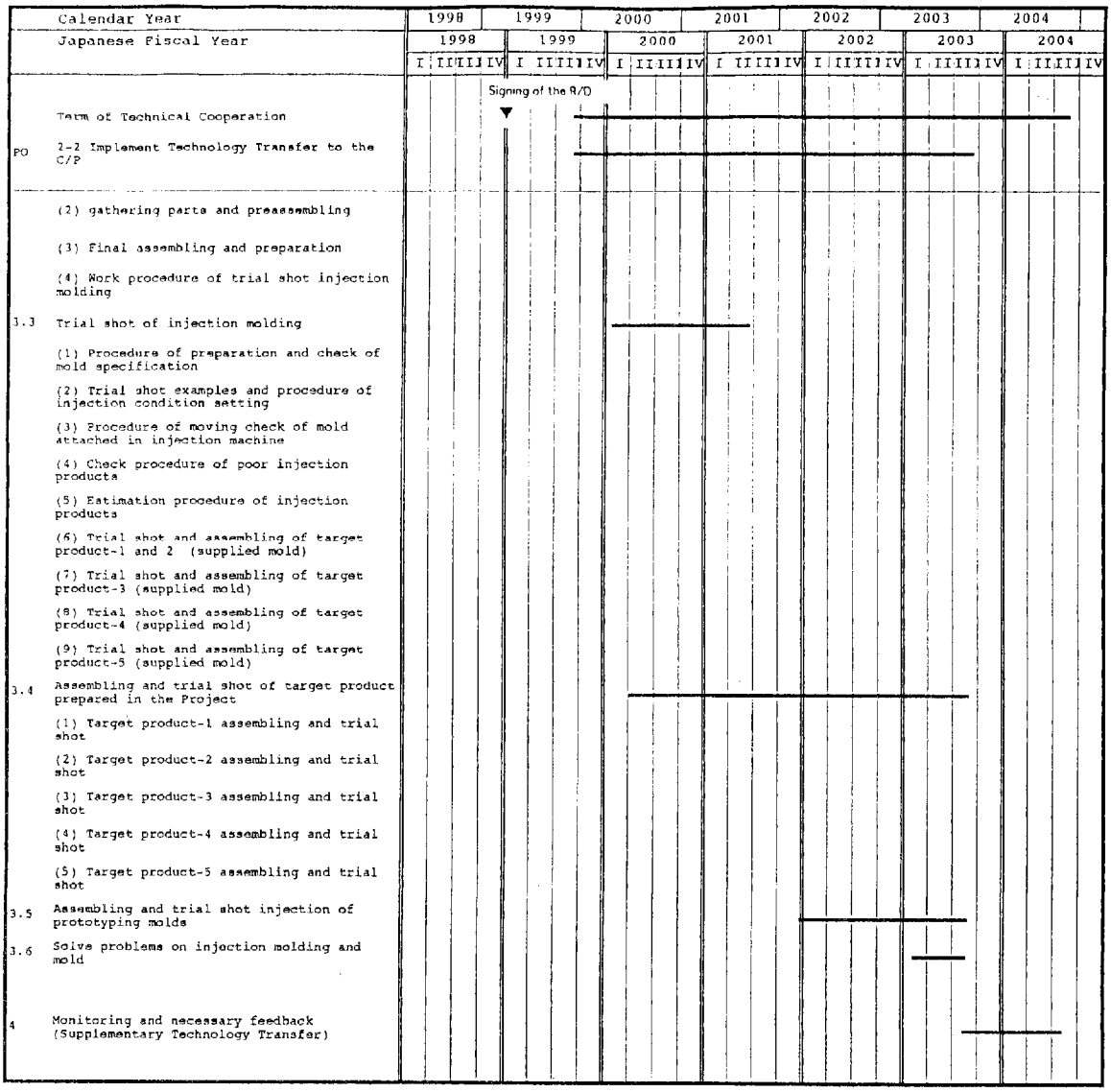
1 The chart above only covers the Technical C/P.

2 The numbers with brackets show the increment of the C/P, which are requested by the Team.

Annex 18 Technical Cooperation Program (Draft)



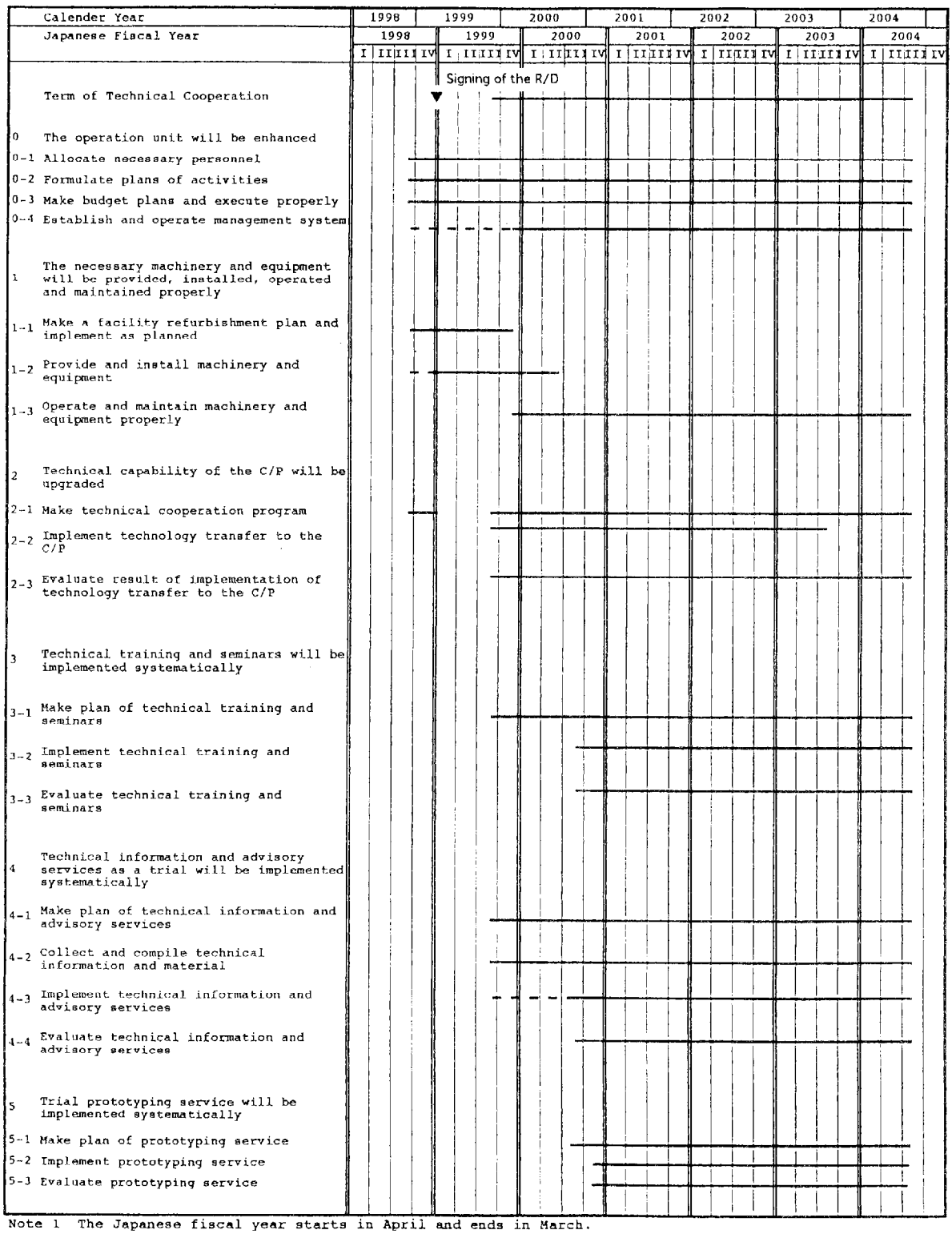

Calendar Year
1998
1999
2000
2001
2002
2003
2004
Japanese Fiscal Year
1998
1999
2000
2001
2002
2003
2004
I II III IV
Signing of the R/D
Term of Technical Cooperation
FO 2-2 Implement Technology Transfer to the C/P
(7) Design of target product-3 by CAD (medium size mold of construction importance: personal computer front panel)
(8) Design of target product-4 by CAD (appearance importance mold: desk telephone)
(9) Exchange of CAD/CAM network data
(10) Design of target product-5 by CAD (Mold with total technical elements: camera body)
1.3 Design of prototyping molds (for needs of model companies etc.)
1.4 Solve problem after trial shot (problems and solution of assembling of injection molding)
2 Injection mold processing
2.1 Fundamentals of processing
(1) How to process prescribed materials for mold making
(2) Procedure of cubic milling and polishing
(3) Treatment of CAD/CAM/CNC data
(4) Process designing and processing condition and procedure
(5) Instruction sheet of each process
(6) Fundamentals of processing machine operation
2.2 Operation and function of processing machines
(1) Operation and function of conventional machines
(2) Operation and function of NC machine (NC lathe & NC milling)
(3) Operation and function of CNC machines (NC, EDM, WEDM etc.)
(4) CAM operation and programming
(5) CAM/CNC operation and programming
2.3 Processing of target products
(1) Processing of target product-1
(2) Processing of target product-2
(3) Processing of target product-3
(4) Processing of target product-4
(5) Processing of target product-5
2.4 Processing of prototyping molds
2.5 Maintenance of machine and processing problem etc.
(1) Regular check and maintenance of machines
(2) Solve problem of processing mold and mold repairing
3 Mold assembling & maintenance and trial shot of injection molding
3.1 Fundamentals of finishing
(1) Polishing (finishing) standard of appearance importance parts
(2) Polishing standard of structure importance parts
(3) Procedure of polishing
3.2 Fundamentals of mold assembling and correcting
(1) Procedure of disassembling and assembling of standard parts



Note 1 The Japanese fiscal year starts in April and ends in March.

2 This schedule is subject to change in accordance with the Progress of the Project.

Annex 19 Draft Plan of Operations (PO)



Note 1 The Japanese fiscal year starts in April and ends in March.
2 This schedule is subject to change in accordance with the Progress of the Project.

Annex 20 Present Occupancy of the C/P

1 Job Description

Name	Job description/Responsibility	Others
1 Design		
Mr. Prakob Janma	Planning and Management in Mold Design Section	University lecturer in Engineering Faculty at Kasetsart University
	Consult in stamping die and plastic injection mold	Experiment/research
		SI-JETRO (Stamping) Committee
		Co-lecturer in Mechanical Design
Mr. Worapong Chinchoksakulchai	Head lecturer in Mechanical Design	improve lecturer paper
	Head lecturer in Autocad 2D and 3D	
Mr. Preecha Jamtath	Lecturer in Mechanical Design	Design-Drawing Rotary flame hardening machine
	Lecturer in Autocad 2D and 3D	Service of Drawing and Autocad
Mr. Sompong Teeracanont	Lecturer in Basic Forging mold Design	Service and consult in Forging Mold
	Lecturer in Autocad 2D and 3D	
Mr. Chanon Suktayu	Lecturer in Basic Forging mold Design	Service and consult in Forging Mold
	Lecturer in Autocad 2D and 3D	
Mr. Chairat Keawdoung	Lecturer in Basic Plastic Injection and Mold Design	Service and consult in Plastic Injection and Plastic Injection Mold
	Lecturer in Autocad 2D and 3D	Improve Lecturer Paper
		Counterpart in NEDO Project
2 Processing		
Mr. Paaiboon Tekapan	Management in Machining Section	Lecturer in CAD/CAM
	Programmer CAD/CAM	
Mr. Satta Denpradith	CNC Milling	Lecturer in Basic CNC
Mr. Sahas Chumsoongnoen	Wide cut, EDM, Plastic Injection Machine	
Mr. Damrong Kratumkhetr	Gear Hobbing, Gear Grinding, Lathe Machine	
Mr. Sirisak Ritngam	CNC Milling, NC Program Machine	Co-lecturer in Basic CNC
Mr. Bantao Wongprachanukul	Machining Center, CAD/CAM Programming	Co-lecturer in CAD/CAM

2 Working Schedule

(1) Design

JOB Description	Days	Ratio
(1) Lecturer	24	10%
(2) Improve and prepare paper	30	12%
(3) Survey Factory	30	12%
(4) Consultancy	33	13%
(5) Research / Experiment / Design	40	16%
(6) SI-JETRO Project	22	9%
(7) NEDO Project	10	4%
(8) University Lecturer	7	3%
(9) Management/Planning	7	3%
(10) Others(to be allocated for Transfe Technology at present)	45	18%
Subtotal (Working days)	247	100%
Holiday (Saturday & Sunday)		
Government Holiday		
Subtotal (Holiday)		
Total (Days/Year)		

(2) Processing

	Days	Ratio
(1) Machining Consultancy from outside	120	49%
(2) Seminars & their Preparation	60	24%
CAD/CAM 4 times/year	20	5days/time
Basic CNC 3 times/year	15	5days/time
(3) Others (5S activities) (to be allocated for the Technology Transfer at present)	67	27%
Subtotal (Working days)	247	100%
Holiday (Saturday & Sunday)	104	
Government Holiday	14	
Subtotal (Holiday)	118	
Total (Days/Year)	365	

Annex 21 List of Machinery and Equipment (Draft)

Field	Equipment/Machinery	Q'ty	Classification (Refer to Footnote)	If to be procured by Jap.or Thai.
Mold Design	Drawing Board (Drafter)	8	U	Thailand
	CAD/CAM System Network Station	1set	P	Japan
	AVR (Server & Client)	1set	P	Thailand
	UPS (Server & Client)	1set	P	Thailand
	Working Desk	16sets	P	Thailand
Mold Processing	Vertical Milling Machine	1	U	Thailand
	Wire-cut EDM	1	R	Japan
	Tools & Jigs	1set	P	Japan
	CNC Vertical Machining Center	1	R	Japan
	Tool Presetter	1	P	Japan
	Tools & Holders	1set	P	Japan
	Electric Discharge Machine	1	R	Japan
	Small Hole Drilling Machine	1	P	Japan
	Polishing Equipment	1	P	Japan
	Profile Grinder	1	P	Japan
	Surface Grinder	1	U	Thailand
	Tool Grinder	1	U	Thailand
	Grinder	1	U	Thailand
	Band Saw	1	U	Thailand
	Lathe	1	U	Thailand
	Horizontal Boring Machine	1	U	Thailand
	Cutting Grinder	1	U	Thailand
	Working Desk	1 set	P	Thailand
	Tool Locker	1 set	P	Thailand
Mold Assembling & Trial Shot	Large Size Injection Machine	1	P	Japan
	Middle Size Injection Machine	1	U	Thailand (NEDO)
	Small Size Injection Machine	1	U	Thailand (NEDO)
	Flexible Mold temperature Controller	3	U	Thailand (NEDO)
	Flexible Mold Temperature Controller	1	P	Japan
	Temperature Controller	2	U	Thailand (NEDO)
	Temperature Controller	1	P	Japan
	Plastic Material Drier	1	U	Thailand (NEDO)
	Model Mold for Plastic Injection	5	P	Japan
	Welding Machine for Mold Repairing	1	P	Japan
	Assembly Tool Kit	3 set	P	Japan
	Polishing & Finishing Kit	2 set	P	Japan
	Working Desk	2 set	P	Thailand

Field	Equipment/Machinery	Q'ty	Classification (Refer to Footnote)	If to be procured by Jap.or Thai.
Inspection	Three Dimensional Coordinate Measuring Machin	1	U	Thailand
	Steel Hardness Tester	1	U	Thailand
	Tool Makers' Microscope	1	U	Thailand
	Pin Gauge	1 set	P	Japan
	Clearance Gauge	10	P	Japan
	Gauge Unit	1 set	U	Thailand
Others	Visual Education Material	1 set	P	Japan
	Textbook	1 set	P	Japan
	Forklift	1	P(to be confirmed)	Thailand
	Hand Truck	5	P	Thailand

NOTE:

1 The definition of above mentioned classification are as follows:

U:Existing and to be used. R:Existing but to be replaced.

I:Existng but to be increased in number. P:To be procured

2 Both sides agreed that the equipment below were excluded in principle from the list of the ones provided for the Project with the following reasons:

(1) Laser Desitizer

Three dimensional coordinate measuring machine is existing, thus it can replace a laser desitizer;

(2) Mold Fitting Machine

This equipment is the one for convenience not the one indispensable for technology transfer.

3 Other equipment for other purpose than those of direct technology transfer, that is, the ones for Technical Training & Seminars, Technical Information and Advisory Services and general administration will be discussed by the dispatch of the Implementation Study Team.

Supplement Chart for Annex 21

Equipment	Specification	Q'ty
CAD/CAM	**CAD/CAM Network System**	1set
System	**CAD/CAM Packaged Skill**	1set
Network	**CAD/CAM Customized System**	1set
Station	**CPU Pentium II 266MHz**	10
	OS Windows NT Workstation 4.0	10
	Memory 64MB	10
	HDD 3.2GB	10
	3D RARG PRO (PCI) 2MB	10
	LAN BOARD (100BASE-TX)	10
	CD-ROM	10
	Key Board	10
	3 Button Mouse	10
	Color CRT 21"	10
	CPU Pentium II 300MHz	5
	OS Windows NT Workstation 4.0	5
	Memory 128MB	5
	HDD 5.2GB	5
	RARG PRO TURBO (AGP 2X) 4MB	5
	LAN BOARD (100BASE-TX)	5
	CD-ROM	5
	Key Board	5
	3 Button Mouse	5
	Color CRT 21"	5
	CPU Pentium II Xeon 400MHz x 2	1
	OS Windows NT Network Server 4.0	1
	Memory 128MB	1
	HDD 12GB (Aly Disk)	1
	HDD 4GB (Hot Plug)	1
	DAT	1
	CD-ROM	1
	Key Board	1
	3 Button Mouse	1
	Color CRT 15"	1
	SCSI Board	1
	SCSI Cable	1
	3.5 Inch Magneto-Optical Disk	1
	HUB UNIT (8ports)	8
	Ethernet Cable	1
	AUI Cable	8
	Twistpair Cable	35
	Transceiver	8
	Laser Printer	1
	HPGL Card	1
	Memory 8MB	1
	LAN Card	1
	Cut Paper A4 Case	1

Equipment	Specification	Q'ty
CAD/CAM System Network Station (continued)	**Laser Printer (continued)**	
	Cut Paper A3 Case	1
	Toner	1
	Copy Power Unit	1
	AO Type Plotter	1
	Memory 4MB	1
	Roll Paper	1
	Ink	1
	Power Supply Circuit (220V)	1
	Detail sepecifications is to be confirmed.	
AVR UNIT	only for server not necessarily for clients	1set
	Detail sepecifications is to be confirmed.	
UPS UNIT	only for server not necessarily for clients	1set
	Detail sepecifications is to be confirmed.	
Working Desk	(for Clients) Each desk should be equipped with a chair as well as with enough space for both placing a personal computer with CAD/CAM software and working with a drawing.	15set
	(for Server) A desk should be equipped with a chair as well as enough space for both placing and operating a server.	1set
	Detail sepecifications are to be confirmed for both.	
Wire-cut Electric Discharge Machine	**Machine Tool**	1
	Each Axis Travel Distance	
	X-axis : 550mm	
	Y-axis : 350mm	
	Z-axis : 300mm	
	Auxiliary Travel	
	U and V Axis: 80 x 80mm	
	Work Table Size (Ceramic Base) : 790 x 500mm	
	Work Tank Dimension : 1,100 x 720mm	
	Maximum Size of Workpiece (X x Y x Z) : 700 x 500 x 300 / 250mm	
	Maximum Weight of Workpiece : 800/680kg	
	Distance from Floor to Table Top : 1,005mm	
	Taper Angle : 20°(/80mm)	
	Wire Tension : 200 to 2,800g	
	Wire Feed Speed : 250mm/sec	
	Wire Diameter : 0.1 to 0.3 mm	
	Wire Spool Volume : 6kg	

Equipment	Specification	Q'ty
Wire-cut Electric Discharge Machine (continued)	**Machine Tool (continued)** Machine Tool Dimension (B x W x H) : 1,950 x 2,870 x 2,300mm Machine Tool Weight : 3,800kg Machine Total Dimension (B x H) : 300 x 2870mm **Dielectric Tank** External Dimension (B x W x H) : 1,000 x 2,200 x 1,650mm Weight (Empty) : 300kg Capacity: 800L Deionizer:10L Filtering System : 2 Replaceable Paper Filter Detail sepecification including options and spare parts is to be confirmed.	
Tools & Jigs	Tools for general purpose machine such as endmill, drill, clampholder Wire for W/C-EDM Jigs for presetter Detail sepecification is to be confirmed.	1 set
CNC Vertical Machining Center	Each Axis Travel Distance X-axis : 550mm Y-axis : 350mm Z-axis : 300mm Distance from Spindle Nose to Table Center 150 - 600mm Table Size 1,000 - 500mm 1,200x550mm Allowable Load on Pallet Table 700kg Pallet Table Top T-slot Pallet Table Height from Floor Level 980mm Spindle Speeds 15 - 20,000rpm Spindle Nose Taper 7/24 taper No. 40 Main Motor 22/18.5kw Rapid Traverse 50,000mm/min Feed Rate for Cutting 1 - 50,000mm/min Tool Shank JIS B633940T Pull-Shud JIS b6339 40P Tool Storage Capacity 15 tools Max Tool Diameter Φ 120 Max. Tool Length 300mm Max. Tool Weight 8kg Power Supply AC200/220V± 10% 50/60Hz± 2% 55kVA Machine Height 3,113mm Floor Space 2,400 x 3,140mm Machine Weight 9,300kg Detail sepecification including options and spare parts is to be confirmed.	1

Equipment	Specification	Q'ty
Tool Presetter	for M/C tool holder Detail sepecification is to be confirmed.	1
Tools & & Holders	Tool, Collet, Colletholder for processing model mold Details are under consideration. Detail sepecification is to be confirmed.	1 set
Electric Discharge Machine	**Machine Tool** Each Axis Travel Distance X-axis : 500mm Y-axis : 400mm Z-axis : 350mm Work Table Size (W x D) : 900 x 500mm Work Tank Inner Dimension : 1,230 x 750 x 450mm Work Tank Capacity : 460L Work Tank Fluid Level : 150 to 450 mm Maximum Weight of Workpiece : 1,000kg Maximum Weight of Electrode : 100kg Dimension of Electrode Mounting Face : Φ 100mm Distance from Chuck to Table Upper Face Distance from Floor to Table Top : 840mm Machine Tool Dimension (W x D x H) : 1,690 x 2,200 x 2,525mm Machine Tool Weight : 4,500kg Machine Total Dimension (W x D) : 2,320 x 2,700mm **Dielectric Tank** External Dimension (W x D x H) : 2,080x 860 x 920mm Weight (Empty) : 300kg Capacity : 800L Filtering System: Replaceable Paper Filters **A. T. C.** Number of Tool Position : 4 Type of Holder : 3R-MACRO, EROWA-ITS Maximum Weight of Electrode : 5kg Power Source : Pneumatic (5kg/cm2) Detail sepecification including options and spare parts is to be confirmed.	1
Small Hole Drilling Machine	drilling a hole for W/C EDM for making parts with small holes Detail sepecification is to be confirmed.	1
Polishing Equipment	Handy automatic polishing machine to polish a mold at final stage Detail sepecification is to be confirmed.	1

Equipment	Specification	Q'ty
Profile Grinder	for processing mold component Detail sepecification is to be confirmed.	1
Working Desk	for smooth operation of each machine tool. Detail sepecification is to be confirmed.	1 set
Tool Locker	for tools and jigs Number of lockers are subject to change with number of tools. Detail sepecification is to be confirmed.	1
Large Size Injection Machine	Screw Diameter : 80mm Injection capacity : 1,282cm3/shot Plasticizing Capacity (P.S) 317kg/hr Injection Pressure : 1,300kgf/cm2 Injection Rate : 462cm3/sec Screw Speed : (Constant Torque 0-120 RPM) Hopper Capacity : 90L Mold Clamping Force : 361tonf Mold clamping stoke : 970mm Minimum mold thickness : 350mm MAX. daylight opening : 1,320mm Clearance between Tie Bars (H x V) : 735 x 735mm Die Plate Dimensions (H x V) : 1,055 x 1,055mm Ejector Stroke : 150mm Pump Motor : 37/4kW/pole Heater Band Capacity : 24.25kW Hydraulic Oil Quantity : 980L Machine Dimensions (L x W x H) : 7.56 x 1.74 x 2.15m Floor Dimensions (L x W) : 6.63x1.36m Machine Weight : 14.2ton Detail sepecification including options and spare parts is to be confirmed.	1
Temperature Controller	The chiller for NEDO project may be used. Detail sepecification including options and spare parts is to be confirmed.	1
Model Mold for Injection	**Target Product** Target Product 1 : Mold, Accessories Target Product 2 : Mold, Accessories Target Product 3 : Mold, Accessories Target Product 4 : Mold, Accessories Target Product 5 : Mold, Accessories	 1 1 1 1 1

Equipment	Specification	Q'ty
Model Mold for Injection (continued)	**Accessories**	
	Product sheets	1
	Specifications for Mold Design	1
	Check Lists for Mold Design	1
	Mold Drawings	1
	Master Process Drawings	1
	Process Planning Documents	1
	Check Lists for Unfinished Work	1
	Check Lists for Trial Shot Evaluation	1
	Records of Mold correction and/or modification	1
	Detail sepecifications including options and spare parts are to be confirmed.	
Welding Machine for Mold Repairing	Handy electrical welding machine for minor repair	1
	Detail sepecifications including options and spare parts are to be confirmed.	
Assembly Tool Unit	for assembling molds	3 set
	Detail sepecifications including options and spare parts are to be confirmed.	
Polishing & Finishing Unit	for final processing	3 set
	Detail sepecifications including options and spare parts are to be confirmed.	
Working Desk	assembly bench & chair, polishing bench & chair, injection bench & chair	1 set
	Detail sepecification is to be confirmed.	
Pin Gauge	for hole inspection	1 set
	Detail sepecification is to be confirmed.	
Clearance Gauge	for assembling and adjusting a mold	10
	Detail sepecification is to be confirmed.	
Visual Education Material	for mold design, mold processing and plastic	1 set
	Detail sepecifications are to be confirmed.	

Equipment	Specification	Q'ty
Textbooks	textbooks and other materials on mold making such as mold design, mold processing, assembling and trial shot and so on. Detail sepecifications are to be confirmed.	1 set
Fork-Lift	for carrying someting heavy such as mold to outside the operation area of a crane Detail sepecifications including options and spare parts are to be confirmed.	1
Hand Truck	for carrying items such as a mold to outside the operation area of a crane one (1) truck for carrying up to one (1) ton and four (4) trucks for carrying up to 500 kg	5

Annex 22 Necessary Renovation and Conditions Fulfilled by BSID

0 Utility, layout, space and other working environment

In addition to the items mentioned below, the detailed conditions to be fulfilled by the Thai side will be informed by the Japanese side, especially regarding utility, layout, space and other working environment necessary for the respective equipment, upon completion of detailed specifications for the said equipment.

1 Crane

a The workshop-A is now equipped with both the one (1) ton and the five (5) ton cranes.

b Though the biggest target product in the Project is expected to be as heavy as one (1) ton, to upgrade the capacity of one (1) ton crane to three (3) ton is recommended, taking the efficiency and easiness of the future services into consideration, as the proposed 350 ton injection machine theoretically produce the product with the mold as heavy as three (3) ton.

c Even in case that the upgrading is hard to be met, such alternative as utilization of forklift or other equipment should be considered for carrying molds within Workshop A.

2 Air-conditioning

The area for processing and assembling mold should be air-conditioned, while a special attention should be paid to the interface between passage of the said crane and the partition (wall) for securing the air-conditioning effect.

3 Layout of the new injection machine

It is recommended that three (3) injection machines, two (2) were provided by NEDO and one (1) will be provided by should be installed closely for convenience of the arrangement of utilities like water supply, power supply, chillier, temperature controller as well as efficiency.

Plumbing for water and compressed air, electric wiring, cooling system, the space for the maintenance of this equipment are to be decided, using the NEDO's case as a reference.

In this connection, BSID is requested to secure the space for both mold keeping and working adjacent to the injection machine.

4 Appropriate Lighting (Illumination)

Appropriate lighting condition are to be arranged. Further details will be discussed in due course of the time.

5 Electricity

The necessary electrical capacity will be informed BSID by JICA in due course of the time.

Upon receipt of it, BSID should take necessary measures to increase the capacity, if necessary in parallel with the notification JICA of whether such increment is required or or not as a result.

6 Network

(1) Connection with other network

Local Area Network (LAN) for the equipment provided by the Japanese side should be independent from the existing LAN in in BSID to avoid the future hampering.

As such, the said equipment should be used exclusively for the technology transfer, not for OA purpose.

(2) E-mail account

BSID is requested to arrange to open E-mail account for the experts.

(3) C/P in charge

As also stipulated in the attached documents, the C/P for the networking should be allocated for the administration of LAN, who will be trained in Japan.

(4) AVR and UPS

As mentioned in the attached documents, BSID will make its effort to provide AVR (Automatic Voltage Regulator) and UPS (Uninterrupted Power Supply) for a server.

7 CAD/CAM Room

Further discussion will be made concerning the layout for CAD/CAM room.

Annex 23 The Function and Composition of Joint Coordinating Committee

1 Functions

The joint coordinating committee will be held at least once a year and whenever necessity arises.

Its functions are as follows:

(1) To settle on the Annual Plan of Operation (APO) of the Project in line with the Tentative Schedule of Implementation (TSI), Technical Cooperation Program (TCP) and Plan of Operation (PO) formulated under the framework of the Record of Discussions;

(2) To coordinate necessary actions to be taken by both sides;

(3) To review the overall progress of the TCP and PO as well as achievement of the APO;

(4) To exchange views on major issues arising from or in connection with the TCP and PO.

2 Composition

(1) Chairperson

Director General, DIP

(2) Co-chairperson

Chief Advisor

(3) Committee Members

(Thai side)

a Representative(s), Department of Technical Economic Cooperations (DTEC)

b Representative(s), DIP

c Representative(s), BSID

d Representative(s), Related Industrial Associations

e Other personnel concerned with the Project decided by the Thai side, if necessary

(Japanese side)

a Coordinator

b Japanese Experts designated by the Chief Advisor

c Representative(s) , JICA Office in the Kingdom of Thailand

d Representative(s), JETRO Bangkok Center (to be confirmed)

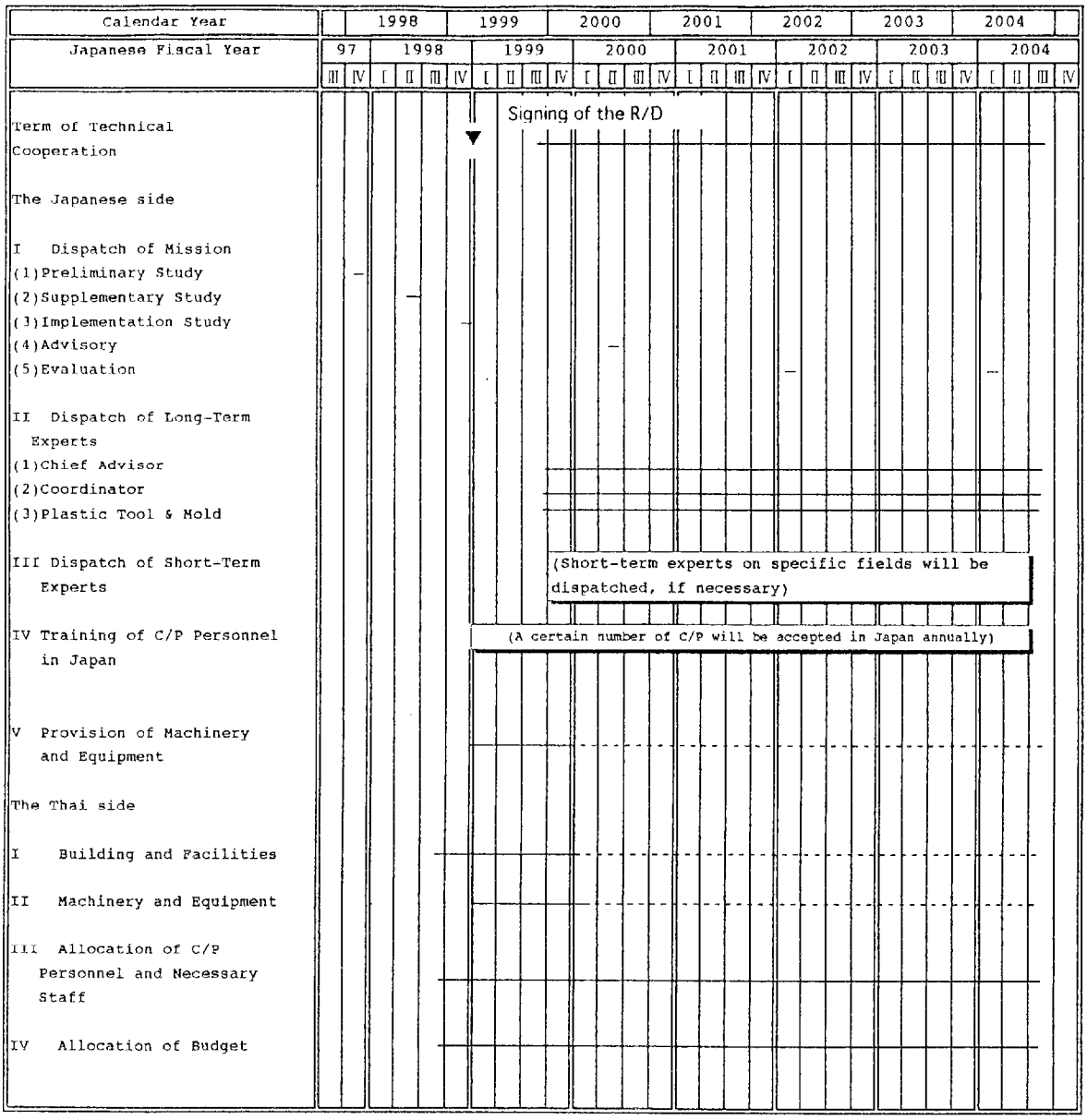
e Representative(s), JODC Bangkok Office (to be confirmed)

f Other personnel concerned to be decided and dispatched by JICA, if necessary

Note :

Official(s) of the Embassy of Japan in the Kingdom of Thailand may attend the Committee as observer(s).

Annex 24 Tentative Schedule of Implementation (TSI)



NOTE:
1 The Japanese fiscal year starts in April and ends in March.
2 This Schedule is subject to change in accordance with the Progress with the Project.

Annex 25 Sample of the R/D

RECORD OF DISCUSSIONS
BETWEEN JAPANESE IMPLEMENTATION STUDY TEAM
AND AUTHORITIES CONCERNED OF THE GOVERNMENT OF
THE KINGDOM OF THAILAND
ON JAPANESE TECHNICAL COOPERATION
FOR SIC-TOOL AND MOLD TECHNOLOGY DEVELOPMENT PROJECT

The Japanese Implementation Study Team organized by Japan International Cooperation Agency and headed by Mr. , (hereinafter referred to as "the Team"), visited the Kingdom of Thailand from (Date Month year) to (Date Month year) for the purpose of working out the details of the technical cooperation program concerning the SIC-Tool and Mold Technology Development Project in the Kingdom of Thailand.

During its stay in the Kingdom of Thailand, the Team exchanged views and had a series of discussions with the Thai authorities concerned with respect to desirable measures to be taken by both Governments for the successful implementation of the above-mentioned Project.

As a result of the discussions and in accordance with the provisions of the Agreement on Technical Cooperation between the Government of Japan and the Government of the Kingdom of Thailand, signed in Tokyo on November 5, 1981 (hereinafter referred to as "the Agreement"), the Team and the Thai authorities concerned agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

Bangkok, (Date Month year)

Name	Name
Leader	Director General
Implementation Study Team	Department of Industrial
Japan International Cooperation	Promotion
Agency	Ministry of Industry
Japan	Kingdom of Thailand

ATTACHED DOCUMENT

I COOPERATION BETWEEN BOTH GOVERNMENTS

1 The Government of the Kingdom of Thailand will implement SIC-Tool and Mold Technology Development Project (hereinafter referred to as "the Project") in cooperation with the Government of Japan.

2 The Project will be implemented in accordance with the Master Plan which is given in Annex I.

II MEASURES TO BE TAKEN BY THE GOVERNMENT OF JAPAN

In accordance with the laws and regulations in force in Japan and the provisions of Article III of the Agreement, the Government of Japan will take, at its own expense, the following measures through Japan International Cooperation Agency (hereinafter referred to as "JICA") according to the normal procedures under the technical cooperation scheme of the Colombo Plan for Cooperative Economic and Social Development in Asia and the Pacific (hereinafter referred to as "the Colombo Plan").

1 DISPATCH OF JAPANESE EXPERTS

The Government of Japan will provide the services of the Japanese experts listed in Annex II.

2 PROVISION OF MACHINERY AND EQUIPMENT

The Government of Japan will provide such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Project as listed in Annex III. The provision of Article VIII-1 of the Agreement will be applied to the Equipment.

3 TRAINING OF THE THAI PERSONNEL IN JAPAN

The Government of Japan will receive the Thai personnel connected with the Project for technical training in Japan.

III MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE KINGDOM OF THAILAND

1 The Government of the Kingdom of Thailand will take necessary measures to ensure the self-reliant operation of the Project during and after the period of Japanese technical cooperation, through the full and active involvement of all related authorities, beneficiary groups and institutions in the Project.

2 The Government of the Kingdom of Thailand will ensure that the technologies and knowledge acquired by the Thai nationals as a result of Japanese technical cooperation will contribute to the economic and social development of the Kingdom of Thailand.

3 In accordance with the provisions of Articles Ⅳ, Ⅴ and Ⅵ of the Agreement, the Government of the Kingdom of Thailand will grant in the Kingdom of Thailand privileges, exemptions and benefits to the Japanese experts referred to in II-1 above and their families.

4 In accordance with the provisions of Article Ⅷ of the Agreement, the Government of the Kingdom of Thailand will ensure that the Equipment referred to in II-2 above will be utilized effectively for the implementation of the Project in consultation with the Japanese experts referred to in Annex II.

5 The Government of the Kingdom of Thailand will take necessary measures to ensure that the knowledge and experience acquired by the Thai personnel through technical training in Japan will be utilized effectively in the implementation of the Project.

6 In accordance with the provision of Article IV-(b) of the Agreement, the Government of the Kingdom of Thailand will provide the services of the Thai counterpart personnel and administrative personnel as listed in Annex IV.

7 In accordance with the provision of Article IV-(a) of the Agreement, the Government of the Kingdom of Thailand will provide the buildings and facilities as listed in Annex V.

8 In accordance with the laws and regulations in force in the Kingdom of Thailand, the Government of the Kingdom of Thailand will take necessary measures to supply or replace at its own expense machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the Equipment provided through JICA under II-2 above.

9 In accordance with the laws and regulations in force in the Kingdom of Thailand, the Government of the Kingdom of Thailand will take necessary measures to meet the running expenses necessary for the implementation of the Project.

IV ADMINISTRATION OF THE PROJECT

1 The Director General, Department of Industrial Promotion (hereinafter referred to as "DIP"), Ministry of Industry, as the Project Director, will bear overall responsibility for the administration and implementation of the Project.

2 The Director, Bureau of Supporting Industries Development (hereinafter referred to as "BSID"), DIP, Ministry of Industry, as the Project Manager, will be responsible for the managerial and technical matters of the Project.

3 The Japanese Chief Advisor will provide necessary recommendations and advice to the Project Director and the Project Manager on any matters pertaining to the implementation of the Project.

4 The Japanese experts will provide necessary technical guidance and advice to the Thai counterpart personnel on technical matters pertaining to the implementation of the Project.

5 For the effective and successful implementation of technical cooperation for the Project, a Joint Coordinating Committee will be established whose functions and composition are described in Annex VI.

V JOINT EVALUATION

Evaluation of the Project will be conducted jointly by the two Governments through JICA and the Thai authorities concerned, (at the middle and) during the last six months of the cooperation term in order to examine the level of achievement.

VI CLAIMS AGAINST JAPANESE EXPERTS

In accordance with the provision of Article VII of the Agreement, the Government of the Kingdom of Thailand shall bear claims, if any arise, against the Japanese experts engaged in technical cooperation for the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in the Kingdom of Thailand except for those arising from the willful misconduct or gross negligence of the Japanese experts.

VII MUTUAL CONSULTATION

There will be mutual consultation between the two Governments on any major issues arising from, or in connection with this Attached Document.

VIII MEASURES TO PROMOTE UNDERSTANDING OF AND SUPPORT FOR THE PROJECT

For the purpose of promoting support for the Project among the people of the Kingdom of Thailand, the Government of the Kingdom will take appropriate measures to make the Project widely known to the people of the Kingdom.

IX TERM OF COOPERATION

The duration of technical cooperation for the Project under this Attached Document will be five (5) years from (Date Month year).

Annex I MASTER PLAN
Annex II LIST OF JAPANESE EXPERTS
Annex III LIST OF MACHINERY AND EQUIPMENT
Annex IV LIST OF THAI COUNTERPART AND ADMINISTRATIVE PERSONNEL
Annex V LIST OF LAND, BUILDINGS AND FACILITIES
Annex VI JOINT COORDINATING COMMITTEE

Annex 26 List of Attendance of the Discussions

The Japanese side

1 Supplementary Study Team

Mr. Makoto Yamashita	Leader
Mr. Hirokichi Yuzawa	Technical Cooperation Program
Mr. Masahiro Chiji	Technical Transfer Program
Mr. Atsuhiko Hatakeyama	Mold Technology
Mr. Fumio Terashima	Cooperation Planning

2 JICA Thailand Office

Mr. Yoshitaka Sumi	Deputy Resident Representative
Mr. Gen Usui	Assistant Resident Representative

3 JETRO Bangkok Center

Mr. Tetsuaki Nonaka	Vice President

The Thai side

1 Depertment of Industrial Promotion (DIP)

Dr. Damri Sukhotanang	Deputy Director General

2 Bureau of Supporting Industry Development (BSID), DIP

Mr. Nuntapit Nakasarn	Director
Mr. Sirichai Pothitapana	Director, Subcontracting Promotion Division
Mr. Phaibul Choopungartm	Director, Metalworking & Machinery Industries Division
Dr. Pasu Loharjun	Director, Plastic and Electronic Component Industry Division
Mr. Prakob Janma	Chief, Product, Mold & Die Design Development Unit
Mr. Panuwat Triyangkulsri	Chief, Research Section, Plastic and Electronic Component Industry Division
Mr. Paiboon Tekapan	Chief, Machining Subdivision
Ms. Orn Puengpol	Acting Chief, General Administration Section

3 Bureau of Industrial Promotion, DIP

Ms. Supa Tangkittikhun	Foreign Relations Officer, Internatinal Cooperation Division

4 Thai Tool and Die Industry Association

Mr. Tanapol Synborisuth	Chairman

5 Thai Plastic Industries Association

Mr. Pradit Hiranpradit	Chairman