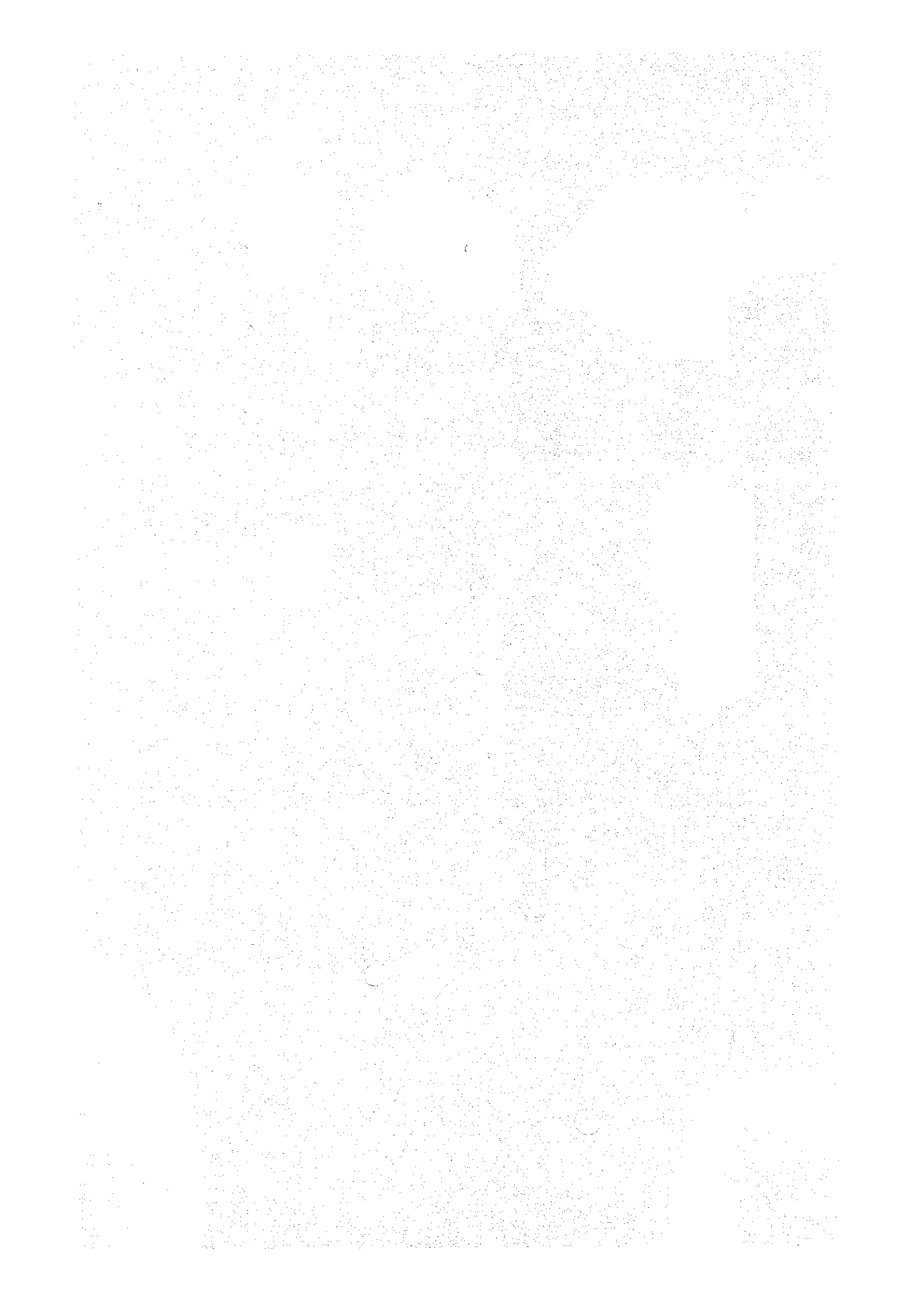
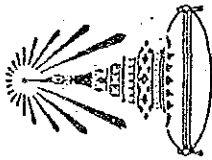


## 11. Computer Service Centre(Chulalongkorn University)





**COMPUTER SERVICE CENTRE  
CHULALONGKORN UNIVERSITY**

**COMPUTER SERVICE CENTRE  
CHULALONGKORN UNIVERSITY**

The Royal Decree for the Constitution of Chulalongkorn University Computer Service Centre was proclaimed in the year 1978. This was followed soon after by the establishment of the Centre charged with the responsibility to provide Chulalongkorn University students and the public in general with facilities for computer science education, the results of research findings, and information on new developments in the field.

*LOCATION*

The Centre is housed in a four-storeyed building situated on Phayathai road, next to the Association of Chulalongkorn University Alumni, Pathumwan, Bangkok 10500.

*TELEPHONE NUMBERS*

215-3547, 215-3550 For the fourth floor, the number is 215-3549.

## *REQUESTS FOR USE OF THE SERVICES*

- 1) A letter of request signed by the head of department or an equally authorised person is needed if the user is from Chulalongkorn University. The letter must specify clearly the number of users, their purposes, equipment needed, the number of hours, the computer language to be used, and the names of the co-ordinators. The letter, together with a one-inch photograph for each user, must be submitted to the Centre's director for approval.
- 2) As for outside users, a letter signed by the head of the agency is needed. Outside users must provide for themselves such materials as magnetic tape, paper tape, etc.

## *COSTS*

Costs must be administered in accordance with the Centre's Service Charges as announced by the University.

## *SERVICES ARE PROVIDED FOR THE FOLLOWING PURPOSES*

- 1) For teaching and learning activities within the University.
- 2) For dissertations, thesis, and research projects conducted by Chulalongkorn University students as well as professors.
- 3) For the University's internal administration.
- 4) For information-banking systems used by the Ministry of University Affairs.
- 5) For tasks conducted by officials from government agencies.
- 6) For the public in general to promote their academic enrichment.

### OFFICIAL HOURS

During 08:00 to 12:00 hours and 13:00 to 16:00 hours, Monday through Friday. Lunch break is from 12:00 to 13:00 hours.

### OPERATION TIMES OF TERMINALS AT VARIOUS POINTS WITHIN THE UNIVERSITY

*Monday to Friday:* 07:00 - 20:00 hours

*Saturday:* 07:00 - 16:00 hours

**NOTE:** 1) Batch tasks may be collected from the Centre one day after the date of submission of the tasks.

2) Information required to appear only on screen can be provided immediately through the visual display terminal (VDT).

3) Times for submission and collection of tasks as well as for computer operation may be extended during examination periods or when there is a great need to use the computer.

### SUBMISSION AND COLLECTION OF TASKS

Computer tasks can be submitted to or collected from the Centre at the following times:

*Monday to Friday:* 07:00 to 20:00 hours

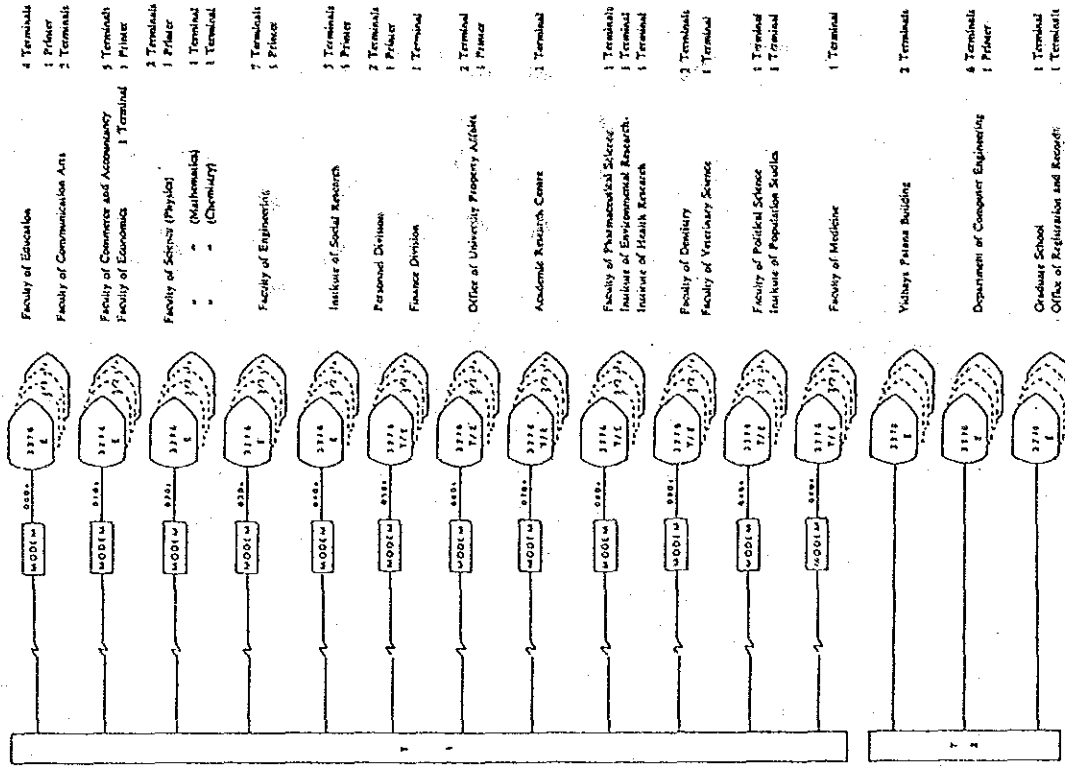
*Saturday:* 08:00 to 16:00 hours

### OPERATING TIMES OF KEYPUNCH; TERMINAL AND KEY TO DISKETTE

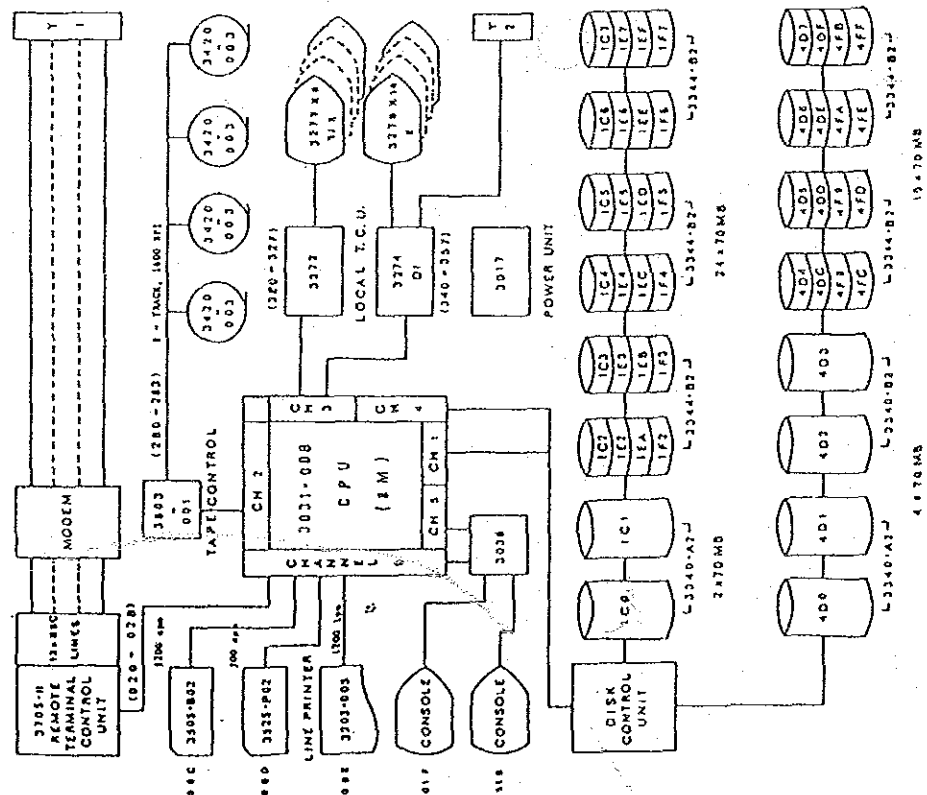
*Monday to Friday:* 07:00 to 20:00 hours

*Saturday:* 07:00 to 16:00 hours

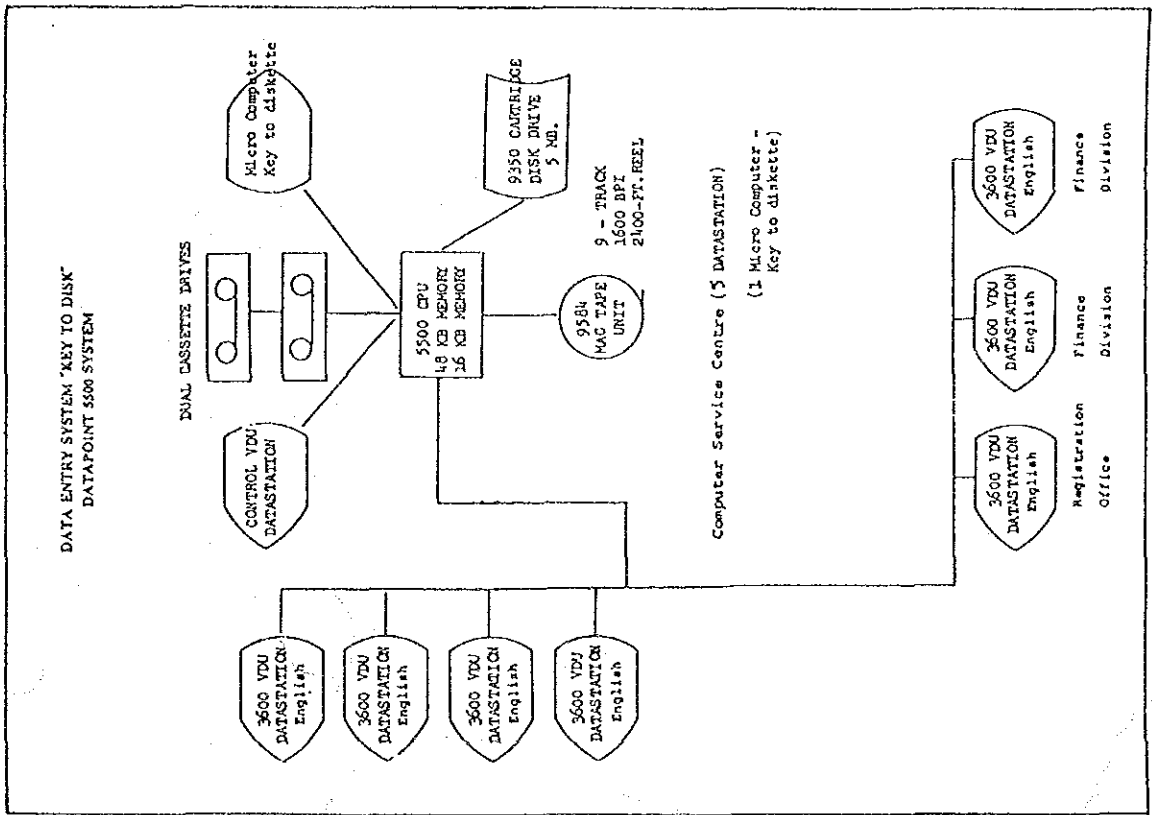
TERMINALS INSTALLED AT VARIOUS POINTS WITHIN THE UNIVERSITY



COMPUTER SYSTEM CONFIGURATION



CHULALONGKORN UNIVERSITY



## IBM 3031 SOFTWARE

### OPERATING SYSTEMS

VM/SP, OS/VSI, DOS/VSE, MUSIC

### COMPILERS

ASSEMBLY, FORTRAN, COBOL, RPGII,  
WATFIV, WATBOL, PASCAL, BASIC

### PACKAGES

SPSSX, SCRIPT, STATPACK, COGO  
CDS/ISIS, ARIANE, CICS/VS

### UTILITIES

SORT/MERGE, DITTO, FASTCOPY, ISPE





## 12. Division of Computer Science (アジア工科大学)



## DIVISION OF COMPUTER SCIENCE

### Academic Programs

The magnitude and complexity of contemporary problems in developing countries call for the application of advanced technology for their solutions. AIT's graduate program in Computer Science is based on the recognition that computers will play a very significant role in improving the quality of life in Asia. The Division of Computer Science offers programs that aim to produce skilled manpower to meet the demands of the region and also to train the trainers who will help disseminate computer technology in the region. Being a center for advanced studies in computer science in Asia, the Division has designed a core curriculum to provide key courses covering all aspects of computing, including those with a strong artificial intelligence tendency. The Division of Computer Science also seeks to develop faculty and student resourcefulness in exploiting the considerable computing facilities available at AIT to solve Asian problems, and to enhance our computing capabilities for that purpose. Students are encouraged to develop their programming skills using all the existing computing facilities: microcomputers, mini- and supermini-computers, as well as the mainframe.

Currently, the Division has three areas of specializations: software engineering, information technology and artificial intelligence. All students admitted to the Division will normally take the following courses:

- Foundation of Computing
- Data Structures and Algorithms
- Software Concepts
- Computer Organization and Architecture
- Principle of Programming Language
- Data Base Design
- Operating Systems
- Software Engineering.

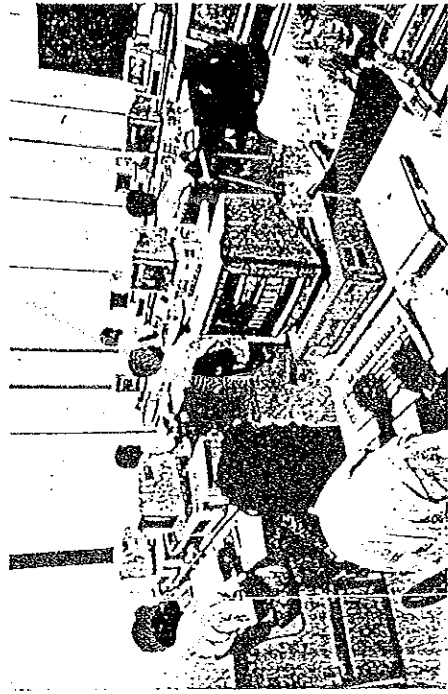
In addition, a wide range of elective courses may be taken to complete the coursework requirements.

Research in the Division covers a variety of topics, from the very practical problems of developing application software and expert systems for specific problems to highly abstract problems of artificial intelligence. Work on intelligent CAI/CAD/CAE and CAD/CAM is also underway.

The Division will, subject only to resources and candidate qualifications, attempt to provide programs to fit individual student needs.

### Laboratory Facilities

The Division of Computer Science emphasizes both theoretical and practical aspects of computing and has a range of modern micro-computers and minicomputers for teaching and research. The more than 40 sets include: Apple Macintosh, IBM PC/XT/AT, Fujitsu FM16s, NEC 9800, NEC APC III, APC IV, Power Mates 1, 2 and 386 and Philips Microcomputer Development Systems (PMDS). In addition to two existing SUN-3, about 10 engineering workstations are available. The super-minicomputers include Norsk Data 530 and 570 computers with more than 50 ordinary, graphics and CAD/CAM terminals. Other facilities to support graduate study and research are available at the AIT Regional Computer Center (RCC). The main computer is an IBM 3083 with 16 megabytes of main memory and on-line disk storage capacity of 24 gigabytes, 8 magnetic tape drives, and over 100 terminals and mainframe-linked PC interactive terminals. Six IBM 5080 CAD/CAM workstations are available at the RCC as well as CNC machines. A local area network of 12 IBM PS/2 and about 25 IBM PCs linked to the mainframe also provide students with the capacity to run their programs both at the workstations and at the mainframe. Programming languages available in the Division or RCC are FORTRAN, PL/1, COBOL, PASCAL, MODULA-2, C, BASIC, APL, PROLOG, LISP and SNOBOL. Data base management packages include IMS, ISIS, SIBAS, QBE, SQL, DATA MANAGER. There are many statistical and mathematics software packages (IMSL, SAS, SPSS, NAG) and simulation languages (DYNAMO, CSMP, SIMULA and GPSS) for use in various applications, in addition to a considerable range of software packages available on microcomputer.



### Admissions

The preferred fields of undergraduate study for candidates seeking admission to the Master's program are in computer engineering or computer science, electronic and electrical engineering, mathematics or statistics. Applicants from other physical science fields are considered if they have already worked as computer professionals.

For the doctoral program a higher degree in Computer Science or in a closely related field is required.

### Courses Offered

|       |        |   |
|-------|--------|---|
| CS.01 | 3(3-0) | Foundation of Computing                 |
| CS.02 | 3(3-0) | Theory of Computation                   |
| CS.03 | 3(3-0) | Data Structures and Algorithms          |
| CS.11 | 3(2-3) | Software Concepts                       |
| CS.12 | 3(2-3) | Software Engineering                    |
| CS.13 | 3(3-0) | Computer Graphics                       |
| CS.14 | 3(2-3) | Software Project Management             |
| CS.15 | 3(3-0) | Principles of Programming Language      |
| CS.16 | 3(3-0) | Compiler Construction                   |
| CS.22 | 3(2-3) | Information Systems Analysis and Design |
| CS.23 | 3(3-0) | Data Base Design                        |
| CS.24 | 3(3-0) | Advanced Data Base Systems              |
| CS.25 | 3(3-0) | Decision Support Systems                |
| CS.26 | 3(3-0) | Information System Resources Management |
| CS.31 | 3(3-0) | Computer Organization and Architecture  |
| CS.32 | 3(2-3) | Microcomputer and Microprocessors       |
| CS.33 | 3(3-0) | Computer Systems Performance            |
| CS.34 | 3(3-0) | Modelling and Simulation                |
| CS.36 | 3(3-0) | Operating Systems                       |
| CS.41 | 3(3-0) | Data Communications                     |
| CS.42 | 3(3-0) | Communications Protocol Technology      |
| CS.51 | 3(2-3) | Fundamentals of Artificial Intelligence |
| CS.53 | 3(3-0) | Knowledge Engineering                   |
| CS.54 | 3(3-0) | Pattern Recognition                     |
| CS.61 | 3(2-3) | Numerical Methods                       |
| CS.63 | 3(3-0) | Real-Time Systems                       |
| CS.81 | 1(2-3) | Fortran Programming                     |
| CS.82 | 3(2-3) | Applied Statistics                      |
| CS.83 | 3(3-0) | Mathematical Methods for Scientists     |

CS.96  
CS.97  
CS.98  
CS.99  
ELCS 11  
ELCS 12  
ELCS 21

Seminars  
Research Studies  
Selected Topics  
Special Studies  
Scientific English  
Interpretation and Production of Discourse  
Information Structuring

### Faculty and Professional Staff

HUYNH NGOC PHUEN, B.Sc., B.A., Hue; M.Sc., D.Tech.Sc., A.I.T. Associate Professor and Division Chairman. (statistics; mathematical software; computer modelling and simulation)

KANCHANA KANCHANASUT, B.Sc., Dip.Comp.Sc., Queensland; M.Sc., Melbourne. Assistant Professor. (algorithms; artificial intelligence; logic programming)

MOHAMMAD AYUB KHAN, B.S.Eng., Faisalabad; M.Eng., AIT; M.Sc., Ph.D., Colorado. Assistant Professor. (programming languages; computer networks)

KANCHIT MALAIWONGS, B.Eng.(Hons.), Chulalongkorn; M.Eng., D.Eng., AIT. Associate Professor. (software engineering; information systems; data base management)

V.M. MALHOTRA, B.E.(Hons.), B.T.T.S., Pliani; M.Tech., Ph.D., I.I.T., Kanpur. Assistant Professor. (operating systems; systems programming automatic programming; compiler design)

R. SADANANDA, B.E., Mysore; M.E., Roorkee; Ph.D., I.I.T., Kanpur. Associate Professor. (artificial intelligence; theoretical computer science)

VILAS WUWONGSE, B.Eng., M.Eng., D.Eng., Tokyo Inst. Tech. Associate Professor. (knowledge engineering; natural language processing; decision support systems)

N.K. NANDA, B.E., J&R; M.E., Roorkee; Ph.D., Southampton. Visiting Faculty. (computer architecture; microprocessors; hardware design)

TROND SKJESOL, M.Sc., Trondheim, Norwegian Inst. Tech. Visiting Faculty. (data communications; operating systems)

T. KIMURA, B.Eng., M.Eng., Univ. of Electro-Communications, Research Engineer and Affiliated Faculty.<sup>11</sup>

ERIK L. J. BOHEZ, B.Eng., High Technical Inst., Saint Antonius Ghent; M.Eng., P.E., State Univ. Ghent. (Research Engineer, Regional Computer Center). Affiliated Faculty.<sup>2</sup>

BERTRAND GALTIER, Diplome d'Ingenieur Geographe ENSG, Paris; Ingenieur de l'Ecole Polytechnique, Paris; DEA d'Ecologie, Orsay. (Assistant Professor, INRDM Program). Affiliated Faculty.<sup>9</sup>

REGINO L. GONZALES, JR, B.S.Ch.E., Cebu Inst. Tech.; M.Eng., AIT. (Manager, PCAD Operations). Affiliated Faculty.

GEORGE T. LEWIS, B.S., Ph.D., Alfred, New York. (Director, Regional Computer Center). Affiliated Faculty.<sup>9</sup>

KAEM NUALCHAWEE, B.S., Chulalongkorn; M.S., Connecticut; Ph.D., Colorado State. (Associate Professor, INRDM Program). Affiliated Faculty.

AMPAL PORNPRASERTSAKUL, B.Sc., Chulalongkorn; M.Sc., AIT. Senior Laboratory Supervisor.

REYNALDO B. PAULO, BSEE, Mindanao State; M.Eng., AIT, Laboratory Supervisor.

#### Seconding Governments and Agencies

1. Australia;
2. Belgium;
3. British Council;
4. Chinese Taipei;
5. Commission of the European Communities;
6. Denmark;
7. Federal Republic of Germany;
8. France;
9. IBM Asia Pacific Group;
10. Italy;
11. Japan;
12. Netherlands;
13. Norway;
14. Republic of Korea;
15. Switzerland;
16. United Kingdom;
17. U.S.A.

## DIVISION OF ENERGY TECHNOLOGY

### Academic Programs

The developing countries of the world must adjust to their increasing energy demand and the decreasing availability of wood and other traditional fuels. The adjustment must be made in a manner which does least harm to the process of development. It is especially difficult for oil-importing developing countries, which must allocate capital to develop alternative supplies of energy whilst continuing to pay for imports of oil until the investments take effect. The majority of countries in the Asia-Pacific region are in this situation. To plan and implement effective energy policies the nations of the region must have specialists with a thorough understanding of energy technology and planning methodologies.

The Division offers two fields of study: renewable sources of energy, energy planning and policy, and one developing field: rational use of energy.

Within the first field of study, specialized courses on solar energy and biomass energy are regularly offered.

Candidates concerned with the environmental aspects of the development of renewable and non-renewable energy sources should also consider the natural resources development and management field of study offered by the Interdisciplinary Natural Resources Development and Management (INRDM) Program. This program focuses on environmental planning and management issues, emphasizing multidisciplinary teamwork based upon a systems approach. The INRDM Program is described on page 45.

The Division pursues research in solar thermal and photovoltaic processes, and biogas plants and biomass; on the planning side, the focus is on supply planning and energy demand management. Current projects cover solar collector testing facilities, photovoltaic modules, photovoltaic refrigerators, the testing of energy equipment for adaptation to tropical climates, auditing in industry, technology and economics of bio coal production, sectoral energy demand, and the links between industrial process and energy.

Applicants to the Division are requested to indicate which specialization they wish to select.

A focal point of a worldwide energy study network, the Energy Technology Division collaborates with other centers in Latin America, Africa, Asia and Europe to

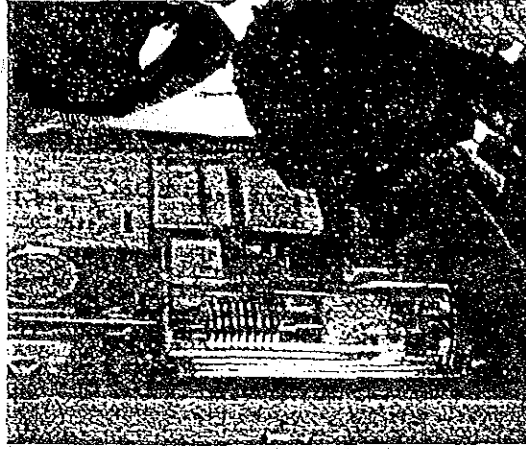
contribute to the knowledge of energy needs and resources of the third world. The Division is implementing a program to promote regular technical and scientific exchanges among energy experts from the developing and the industrialized countries.

### Laboratory Facilities

Facilities available in the Division include standard laboratory experiments for the study of heat transfer, refrigeration, fluid mechanics and combustion.

A well-equipped thermal and photovoltaic laboratory and a large open-field testing area known as the Energy Research Park are used for teaching, laboratory and research purposes. The park contains solar, wind and bio-energy devices.

The Division has a considerable inventory of equipment for instrumentation and measurement as well as micro-computer facilities.



### Admissions

The preferred fields of undergraduate study for candidates seeking admission to the Master's program are in mechanical, electrical or chemical engineering, applied physics or chemistry.

NUATIP RASMI BHUTI, B.A., Dipl.L.S., Chulalongkorn; M.L.S., Peabody.  
Senior Librarian.

YADA SARAKUL, B.Ed., Dipl.Sc., Dipl.L.S., Chulalongkorn. Senior Librarian.

NONGLAK SATAYAPHANICH, Cert.Sec., Penang Convent. Librarian I.

ANUPAP THONGPRON, B.A. (Statistics), Thammasat. Programmer II.

#### Regional Energy Resources Information Center (RERIC):

ON-ANONG SUPANIRANAT, B.Sc., M.Sc. (Chem. Tech.), Chulalongkorn. Senior Information Scientist II.

SOMCHART PAISARNRAT, B.Sc. (Food Sci. & Tech.), Kasetsart; D.A.A., Ph.D. (Biotech.), ENSAT, Toulouse. Information Scientist I.

YUVA RAJA UPADHYAYA, B.E. (Mech.), Indira; M.Eng., AIT. Information Scientist I.

RE RIC's regular publications are:

- RE RIC News
- RE RIC International Energy Journal
- RE RIC Holdings List
- Abstracts of AIT Reports & Publications on Energy
- RE RIC Membership Directory.

Occasional publications include research reports, do-it-yourself booklets, directories, and proceedings of conferences and workshops sponsored by AIT.

#### Asian Geotechnical Engineering Information Center (AGE):

EMMANUEL C. ITORRALBA, B.S.C.E., Mindanao; M.Eng., AIT. Information Scientist I.

#### Environmental Sanitation Information Center (ENSIC):

KIPAN K. BHATTARAI, B.Sc., Punjab; M.S. (Eng.), Hawaii; Ph.D. (Env. Eng.), AIT. ADB-AIT Project Manager.

MA SIEN MYA, B.Sc. (Chem.), Rangoon Arts & Science Univ.; M.Sc., AIT. Senior Information Scientist I.

LOY TECK-SUAN, B.Sc. (Env.Sc.), UPM, Malaysia; M.Sc. AIT. Information Scientist I.

#### International Ferroceement Information Center (IFIC):

LILIA R. AUSTRIACO, B.Sc., Civil Eng. (Cum Laude), Mapua Inst. Tech.; M.Eng., AIT. Senior Information Scientist II.

#### REGIONAL COMPUTER CENTER (RCC)

The Regional Computer Center provides computing services for both the academic and administrative communities in AIT.

The major computing facilities of AIT are housed at the RCC. RCC's mainframe computer is an IBM/3083 with 16 MB of main memory and peripherals including 24 GB of on-line DASD, over 100 terminals and mainframe-linked PCS, two line printers, a laser printer, two plotters, eight tape drives, a communications controller for remote workstations, CAD workstations and image processing workstations for processing satellite-sensing data. A microwave data transfer facility is available for remote users of the mainframe. Both interactive and batch processing are supported through the VM/SP (host) and OS/VS1 (guest) operating systems.

The RCC's CAD/CAM laboratory is equipped with IBM 5080 CAD workstations, EMCO CNC machines, and hi-speed microcomputers. The laboratory is used for training services, academic research and development, and outreach activities. Major software packages used in CAD/CAM applications include CADAM, CATIA, GFIS ANSYS, APT, FAPT, and Post-processor Generator.



The microcomputing facilities at the RCC provide some of the most modern equipment available in the Region. Microcomputer laboratories are equipped with stand-alone IBM and NEC microcomputers which includes the latest of IBM PS/2s. Training facilities also include a Local Area Network (LAN) laboratory.

Over one hundred software products, centrally installed in the mainframe computer and in LAN (microcomputer) servers, are available to all users of RCC facilities. These include most of the IBM language compilers and software for information storage and retrieval, and various products for scientific, engineering, business, administrative and planning applications.

RCC is operated and managed by professional staff from more than ten countries. User Forums are conducted every Wednesday beginning in the second week of each term to provide instruction and guidance to facilitate the use of the computer systems. RCC professional staff are available during office hours to help users solve problems related to the use of computer systems and access of software.

ERIK L.J. BOHEZ, B.Eng., High Technical Inst. Saint Antonius, Ghent; M.Eng., P.E., State Univ. Ghent. Research Engineer.

KIEW KUAN BOON, B.Sc., London; M.Sc., AIT. External Services Officer.

PASINEE BUNNAG, B.Sc., Ramkhamhaeng. Sr. Programmer.

APISIT CHARITSUE, B.Sc., Silpakorn; M.Sc., AIT. Systems Analyst.

D.P.A. DIAS, B.Sc. (Phy.Sc.), Sri Lanka; M.Sc., AIT. Manager, Business Operations.

REGINO L. GONZALES, JR., B.S.Ch.E., Cebu Inst. Tech.; M.Eng., AIT. Manager, PCAD Operations.

AGUS HARIANTO, M.Sc. (Comp.Sc.), Technical Univ., Berlin. Manager, System Operations.

ORACHORN PUNYAJARAY, B.Pol.Sc., Chulalongkorn; M.Sc., AIT. DP Supervisor.

PRAKASH SHRESTHA, B.Eng. (Civil), Roorkee; M.Eng., AIT. Systems Analyst.

VILAIWAN SUPHAVARODOM, B.Sc. (Stat.), Chulalongkorn; M.S., Dayton. Sr. Systems Analyst & PCAD Technical Coordinator.

MAI CAO THI, B.Sc., USSR; M.Sc., AIT. Systems Programmer.

H.L. TIEN, B.Eng. (Cybernetics), CVUT, Praques; M.Eng., AIT. Manager, CAD/CAM Services & Training.

#### Professional Staff

GEORGE T. LEWIS, Ph.D. (Materials Sc.), Alfred, New York. Center Director.

MICHELE ANTONELLI, M.Sc. (Comp.Sc.), Pisa. Research Scientist.

CHUKUL AUTHANUPAN, B.Sc. (Stat.), Silpakorn. Sr. Programmer.

#### Seconding Governments and Agencies

1. Australia; 2. Belgium; 3. British Council; 4. Chinese Taipei; 5. Commission of the European Communities; 6. Denmark; 7. Federal Republic of Germany; 8. France; 9. IBM Asia Pacific Group; 10. Italy; 11. Japan; 12. Netherlands; 13. Norway; 14. Republic of Korea; 15. Switzerland; 16. United Kingdom; 17. U.S.A.



13. Rajamangala Institute of Technology パンフレット

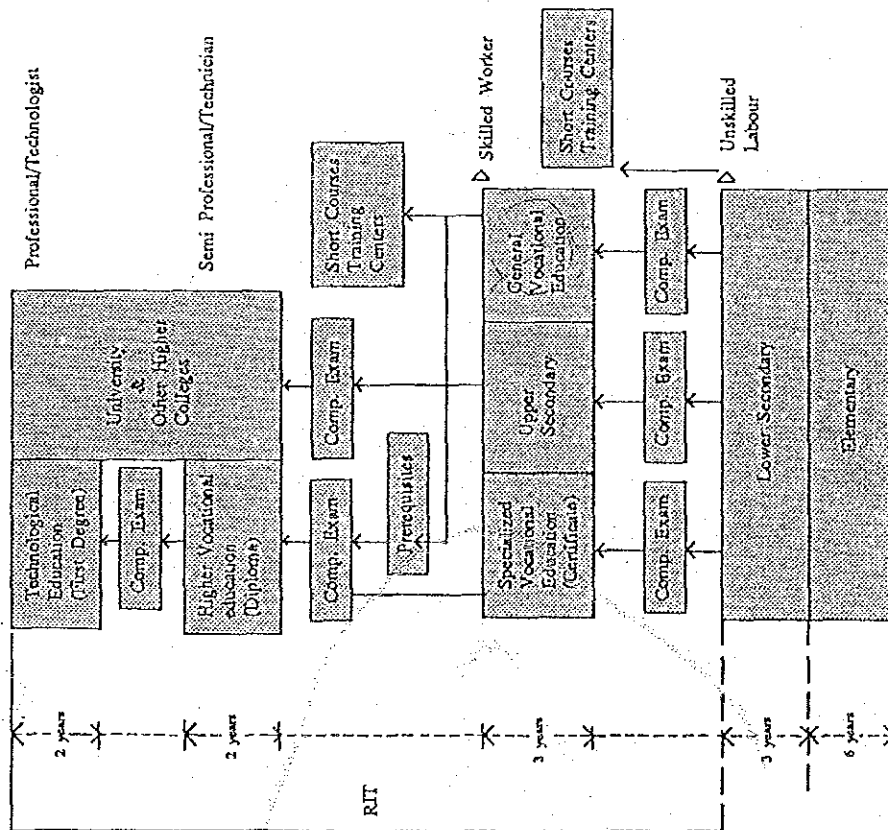


**RAJAMANGALA**  
INSTITUTE OF TECHNOLOGY

BULLETIN  
**RIT**

Ministry of Education  
Bangkok Thailand  
1989

## THE SYSTEM OF EDUCATION IN THAILAND



N.B. Comp. Exam = Competitive Examination.

Rajamangala Institute of Technology (RIT) was founded in 1975 to provide graduates from vocational and technical schools with an opportunity of furthering their education to degree level.

The establishment of RIT could be conceived as a recognition, on the part of the Government, of the need to promote and develop vocational education in Thailand to the fullest extent. Thus RIT was chosen to fulfill the role of a vocational university, a unique amongst Thailand's educational institutions.

In 1977, 28 technical institutes from the Department of Vocational Education came under the administration of RIT. In 1983 Borpipimuk Mahamek Campus was founded and became the 29th campus of RIT.

These 29 campuses are subdivided into specialized colleges: ten agricultural, ten technical, five commercial, three home economics, and one arts and crafts. They offer a wide variety of courses at three levels: Degree Level, Higher Vocational Diploma Level and Vocational Certificate Level.

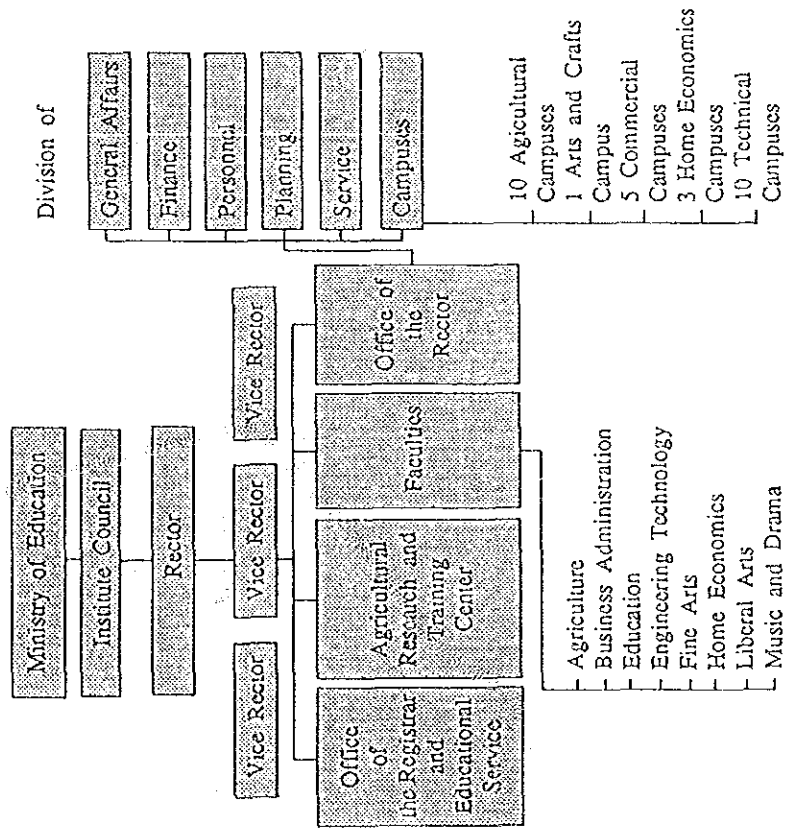
RIT administers the vocational and higher vocational courses but operation of the degree courses is delegated to the individual faculties. These comprise:

- Faculty of Agriculture (Bangphra and Nakorn Srinthamarat)
- Faculty of Business Administration
- Faculty of Education
- Faculty of Engineering Technology
- Faculty of Fine Arts
- Faculty of Home Economics
- Faculty of Liberal Arts
- Faculty of Music and Drama

RIT has recently developed a three-year curriculum to enable secondary school graduates to continue their studies at Diploma level. New faculties and campuses will be created to keep pace with the changing educational and social realities of the country.

## THE ORGANIZATION OF THE INSTITUTE

The organization of the Institute and its relationship to the Ministry of Education is shown in the chart.



## Programs of Study

The Institute offers technical education at three levels, generally referred to as Certificate, Diploma and Bachelor's degree. The programs consist respectively of:

1. A three-year course of instruction at upper vocational level (Grades 10, 11, 12) leading to the award of the Vocational Certificate.
2. A two-year course of study at pre-degree level (Grades 13, 14) leading to the award of the Higher Vocational Diploma.
3. A four-year course of study leading to the award of a Bachelor's degree. However, students who have obtained the Higher Vocational Diploma can normally complete the degree program in two years.

# ELECTRONICS ENGINEERING

## COURSE OF STUDY

|                          | Credits         |  | Credits |
|--------------------------|-----------------|--|---------|
| 424 - 203                | 3               | Data Processing                                      |         |
| 424 - 204                | 3               | PASCAL Programming                                   |         |
| 424 - 301                | 3               | ASSEMBLY Language Programming                        |         |
| 424 - 303                | 3               | Computer Engineering                                 |         |
| 424 - 404                | 3               | Computer Architecture                                |         |
| 424 - 408                | 3               | Software Engineering                                 |         |
| 424 - 409                | 1               | Software Engineering Lab                             |         |
| 425 - 303                | 1               | Communication Engineering Lab I                      |         |
| 425 - 404                | 3               | U.H.F. Techniques                                    |         |
| 425 - 405                | 3               | Modulation Techniques                                |         |
| 425 - 406                | 3               | Telephone Engineering                                |         |
| 425 - 407                | 3               | Communication Engineering Lab II                     |         |
| 426 - 301                | 1               | Control Devices and System                           |         |
| 426 - 402                | 3               | Analog Computer                                      |         |
| 426 - 403                | 3               | Servomechanics                                       |         |
| 426 - 404                | 3               | Industrial control System & Measurement              |         |
| 426 - 405                | 3               | Digital Control System                               |         |
| 426 - 406                | 3               | Feedback Control System Lab                          |         |
| 426 - 407                | 1               | Automatic Control System I                           |         |
| 426 - 408                | 3               | Automatic Power Regulation System                    |         |
| 426 - 409                | 3               | Automatic Control System Lab                         |         |
| 426 - 410                | 3               | Control System                                       |         |
| 426 - 411                | 3               | Automatic Control System II                          |         |
| 429 - 301                | 2               | Work Shop I  |         |
| 429 - 302                | 2               | Work Shop II   |         |
| 429 - 404                | 3               | On-the-Job Training                                  |         |
| 429 - 406                | 3               | Advanced Topics in Electrical Engineering            |         |
| 490 - 480                | 2               | Project in Education                                 |         |
| 490 - 481                | 2               | Teaching of Specific Subjects I                      |         |
| 490 - 482                | 3               | Teaching of Specific Subject II                      |         |
| 490 - 483                | 3               | Training Practices in Specific Shop I                |         |
| 490 - 484                | 3               | Training Practices in Specific Shop II               |         |
| 490 - 485                | 1               | Seminar in School Problems                           |         |
| 490 - 486                | 2               | Industrial Co-operation                              |         |
| 4. Free Elective Courses |                 |  |         |
|                          | Required number |  | Credits |
|                          |                 | 1. Liberal Arts Courses                              | 44      |
|                          |                 | 2. Technology Courses                                |         |
|                          |                 | 2.1 Core Engineering                                 | 21      |
|                          |                 | Required number                                      |         |
|                          |                 | 2.2 Electronics Technology                           | 43      |
|                          |                 | Required number                                      |         |
|                          |                 | 421 - 201 Electric Circuits I                        | 3       |
|                          |                 | 421 - 202 Electric Circuits Laboratory I             | 1       |
|                          |                 | 421 - 203 Electric Circuits II                       | 3       |
|                          |                 | 421 - 204 Electromagnetic Fundamental                | 3       |
|                          |                 | 421 - 205 Electrical Mathematics I                   | 3       |
|                          |                 | 421 - 301 Electrical Measurement and Instrumentation | 3       |
|                          |                 | 423 - 201 Electronic Circuits I                      | 3       |
|                          |                 | 423 - 202 Electronic Circuits Laboratory I           | 1       |
|                          |                 | 423 - 301 Electronic Circuits II                     | 3       |
|                          |                 | 423 - 302 Electronic Devices                         | 3       |
|                          |                 | 424 - 001 Introduction to Computer Programming       | 3       |
|                          |                 | 426 - 401 Feedback Control System                    | 3       |
|                          |                 | 428 - 201 Pulse and Switching                        | 3       |
|                          |                 | 428 - 302 Digital Circuit Laboratory                 | 1       |
|                          |                 | 429 - 402 Pre-project                                | 1       |
|                          |                 | 429 - 403 Project                                    | 3       |
|                          |                 | 2.3 Specialized Course                               |         |
|                          |                 | 2.3.1 Communication                                  | 21      |
|                          |                 | Required number                                      |         |
|                          |                 | 425 - 201 Principles of Communication                | 3       |
|                          |                 | 425 - 301 Electromagnetic Field                      | 3       |
|                          |                 | 425 - 302 Communication Engineering                  | 3       |
|                          |                 | 425 - 401 Antenna Engineering                        | 3       |
|                          |                 | 425 - 402 Transmission Line                          | 3       |

|  | Credits |   | Credits |
|--|---------|---|---------|
| 425 - 403 Microwave Engineering                      | 3       | 424 - 404 Computer Architecture                     | 3       |
| 428 - 403 Digital Communication                      | 3       | 424 - 408 Software Engineering                      | 3       |
| 2.3.2 Computer                                       | 21      | 424 - 409 Software Engineering Lab                  | 1       |
| Required number                                      |         | 425 - 303 Communication Engineering Lab             | 1       |
| 424 - 302 Introduction to Data Structure             | 3       | 425 - 404 U.H.F. Techniques                         | 3       |
| 424 - 401 Operating System                           | 3       | 425 - 405 Modulation Techniques                     | 3       |
| 424 - 402 Data Communication                         | 3       | 425 - 406 Telephone Engineering                     | 3       |
| 424 - 403 System Programming                         | 3       | 425 - 407 Communication Engineering Lab II          | 1       |
| 428 - 304 Microprocessor I                           | 3       | 426 - 301 Control Devices and System                | 3       |
| 428 - 401 Microprocessor II                          | 3       | 426 - 402 Analog Computer                           | 3       |
| 428 - 402 Digital System Design                      | 3       | 426 - 403 Servo Mechanics                           | 3       |
| 2.4 Technical Elective Courses                       | 15      | 426 - 404 Industrial Control System & Measurement   | 3       |
| Required number                                      |         | 426 - 405 Digital Control System                    | 3       |
| 421 - 302 Network Analysis                           | 3       | 426 - 406 Feedback Control System Lab               | 1       |
| 421 - 303 Electrical Mathematics II                  | 3       | 426 - 407 Automatic Control System I                | 3       |
| 421 - 401 Discrete Mathematics II                    | 3       | 426 - 408 Automatic Power Regulation System         | 3       |
| 421 - 402 Numerical Methods and Digital Computation  | 3       | 426 - 409 Automatic Control System Lab              | 1       |
| 421 - 405 Laser Techniques                           | 3       | 426 - 410 Control System                            | 3       |
| 421 - 406 Advanced Electrical Circuits               | 3       | 426 - 411 Automatic Control System II               | 3       |
| 422 - 404 Energy Conversion                          | 3       | 429 - 301 Work Shop I                               | 2       |
| 422 - 405 Electric Drives                            | 3       | 429 - 302 Work Shop II                              | 2       |
| 423 - 303 Video Techniques                           | 3       | 429 - 403 Technical Seminar                         | 1       |
| 423 - 304 Communication Electronics                  | 3       | 429 - 404 On-the-Job Training                       | 3       |
| 423 - 401 Advanced Electronic Circuits Design        | 3       | 429 - 405 Advanced Topics in Electronic Engineering | 3       |
| 423 - 402 Industrial Electronics                     | 3       | 3. Free Elective Courses                            | 6       |
| 423 - 403 Power Electronics                          | 3       | Required number                                     |         |
| 423 - 404 Television Engineering                     | 3       |   |         |
| 423 - 405 Linear Integrated Circuits                 | 3       |   |         |
| 423 - 406 Opto Electronics                           | 3       |   |         |
| 423 - 407 Medical Electronics                        | 3       |   |         |
| 423 - 408 Electronic Equipment Design and Production | 3       |   |         |
| 424 - 201 BASIC Programming                          | 3       |   |         |
| 424 - 202 FORTRAN Programming                        | 3       |   |         |
| 424 - 203 Data Processing                            | 3       |   |         |
| 424 - 204 PASCAL Programming                         | 3       |   |         |
| 424 - 301 ASSEMBLY Language Programming              | 3       |   |         |
| 424 - 303 Computer Engineering                       | 3       |   |         |





## 14. Thai Danu Bankパンフレット



# **THAI DANU BANK**

## **40 YEARS OF PROGRESSIVE BANKING**

A special publication of the Bangkok Post



# THAI DANU BANK: 40 years of progressive banking

Since it opened for business on April 8, 1949, the activities of the Thai Danu Bank have successfully progressed and expanded at a steady pace.

The late M.C. Viwatchai Jayant (His Highness Prince Viwatchai), the bank's board chairman at the time, who was also a former Governor of the Bank of Thailand and Finance Minister, announced the policy for the bank's operations and management at the first annual general meeting of the bank's shareholders held on March 17, 1950:

"We must always keep our bank's position solvent. Also, staff members at all levels must remember two things: First, we must give and maintain the best services to the general public; and second, we must be loyal to the bank," he said.

This policy underscored the principal responsibility of the commercial banking sector. Commercial banks serve as important financial institutions serving the public all over the Kingdom — from government officials, businessmen and the people in general.

Since the beginning, Thai Danu has provided the public with convenient financial support which has, in turn, developed and benefitted the overall economy. In recent years, the bank has placed more emphasis on customer service and has also promoted professional consciousness among its staff members at all levels, i.e., it has focussed on the paramount importance of professional integrity and ethics, as well as management expertise and experience. This has earned the bank the trust, respect and acceptance of the Thai public.

There was no looking back since the bank began operations 40 years ago, although its best years were the period between 1984 to 1987, when the bank began implementing its long-term five-year plan. In line with the plan, the bank was able to pinpoint its targets, policies and operational strategies in specific fields that



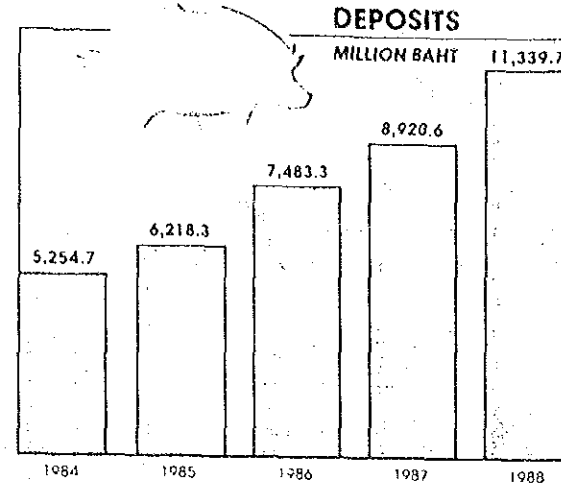
The Thai Danu Bank head office on Silom Road.

would eventually help upgrade and improve the bank's operations. To support this plan and facilitate growth, the bank streamlined its management and operations to promote efficiency and service.

The success of the plan hinged on the bank's ability to adapt itself to changing circumstances in a world of increased competition, especially in the service sector and it required increased staff efficiency at all levels, better organisation of a working team and decentralisation

of services through the branch system.

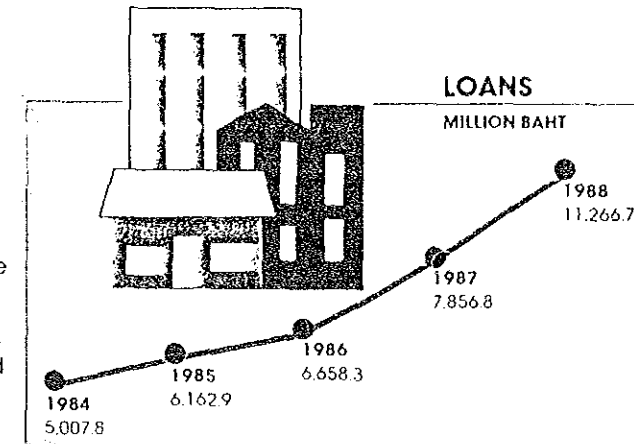
Considered by present standards to be a small bank, it was not easy for Thai Danu to maintain, nor for that matter, expedite growth in a short period of time. But the bank was determined to continue its growth. It succeeded in doing so by initiating various projects and providing the best services possible. Its progress was marked by a sense of security and by making sure that staff morale was always at its highest.



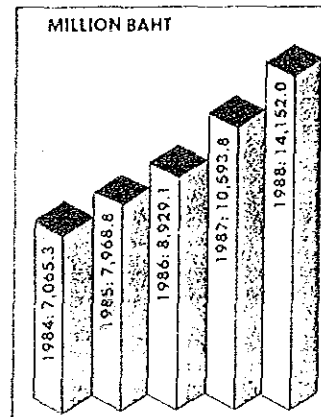
From 1984-88, Thai Danu Bank deposits rose steadily at a rate higher than the banking system in general. In 1988, deposits totalled 11,339.7 million baht, an increase of 27.12 per cent, which is higher than the 19.5 per cent overall average for the banking system. As a result of this phenomenal growth, the bank was upgraded from seventh place in terms of growth in 1984 to second place in the Thai commercial banking system. The bank's market share increased from 0.97 per cent in 1984 to 1.23 per cent in 1988. Market share is expected to increase by 1.80 per cent by 1993.

## LOANS

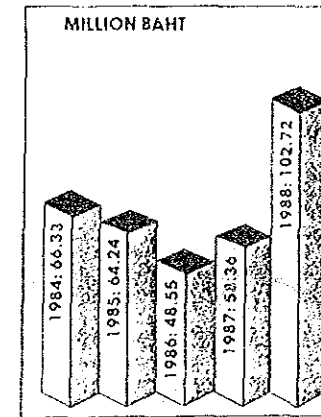
The bank extended a large volume of loans to small businesses, large-scale private sector enterprises and important government-supported projects, totalling 11,266.7 million baht at year end 1988. This represents an increase of 43.42 per cent over the preceding year, and was the highest rate recorded for five years, soaring above the average rate. Again the bank rated second place among the country's 15 commercial banks at the end of 1988.



## ASSETS

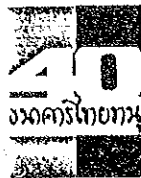


## NET PROFIT



## ASSETS

Due to the high growth rate in the commercial banking sector, the bank recorded a dramatic increase in its total assets, especially in 1988 when bank assets skyrocketed to 14,152.0 million baht, representing an increase of 33.39 per cent from the previous year. The bank is now rated second among Thai commercial banks in terms of growth.



# Comprehensive banking services

## NET PROFITS

The bank has been registering a steady increase in profits. In 1988, profits increased dramatically by nearly 100 per cent from 1987, with the total net profit recorded at 102.72 million baht, an increase of 76.04 per cent.

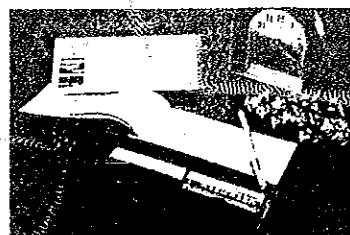
## CAPITAL FUNDS

Capital funds in 1988 stood at 903.5 million baht, an increase of 3.36 per cent from the preceding year. The bank also increased its registered share capital from 150 million baht to 300 million baht during 1985 to 1988. On February 15, 1988, in anticipation of continued high growth, the bank's executive committee decided to increase registered capital by an additional 300 million baht, bringing the total registered capital to 600 million baht. These additional shares will be made available to the public in the future.

## TOWARDS A BRIGHT FUTURE

During the 40 years since its establishment, the Thai Danu Bank has developed itself successfully by making steady progress in its operations and by encouraging high quality and efficiency. Today, the bank has branches in Bangkok and in major towns in every region, as it gradually extends its services to Thailand's rural areas.

In addition to an efficient and loyal staff, the bank also has acquired the latest in computerised banking technology which it now uses in its daily operations, preparatory to further future expansion.



**Bangkok Cable**  
Mrs. Nualchan Boonpojanasoonorn, Vice-President and Manager of Thai Danu's Credit Administration Department, and other bank executives visit Bangkok Cable. They were welcomed by the company's top executives Mr. Sompongse and Mrs. Tipa Nakomsri.



**St. John School**  
Mr. Korok Thilert, Lardprao Branch Manager is shown a model of the St. John School by Headmaster Ajarn Smai Chinpaha.



**Thonburi Lace**  
Mrs. Nualchan Boonpojanasoonorn, Vice-President and Manager of Thai Danu Bank's Credit Administration Department, leads a group of TDB credit management personnel on an observation tour of the Thonburi Lace factory owned by Mr. Amorn Panichkraiwanosin, who is shown explaining the company's operations.



**Deja Hospital**  
Thai Danu President Mr. Pakorn Thavisin cuts the ceremonial ribbon to officially open Deja Hospital's new operating room early this year.



**Jeahahoul Co., Ltd.**  
Bank executives, led by Senior Vice-President Mr. Amnuay Petchintra, visit the rubber and durian plantation of Mr. Suwat Farpralanchai of Jeahahoul Co., Ltd. in southern Thailand.



**Siam Yamaha Co., Ltd.**  
Senior Vice-President Mr. Khan Prachuabmoh and Thonglo Branch Manager Mrs. Chawawan Sawang, etc. are shown during a visit to the Siam Yamaha Co., Ltd. On hand to welcome them is factory Manager Mr. Daeng Chiankul.

As part of its comprehensive banking service, Thai Danu Bank offers its clients a credit programme that includes free consultation services and assistance in gathering data and information. Among the organisations and companies which have taken advantage of the bank's credit programme are:



**Bangkok Can Manufacturing Co., Ltd.**  
Thai Danu Bank Senior Vice-President Mr. Khan Prachuabmoh observes operations at Bangkok Can Manufacturing Co., Ltd.



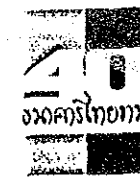
**Colgate-Palmolive Co., Ltd.**  
Thai Danu Bank President Mr. Pakorn Thavisin is shown various consumer products produced by Colgate-Palmolive Co., Ltd., one of the bank's clients in the industrial sector.



**Bua Restaurant**  
Mr. Niwat Mongkolpowat, Branch Manager of Onnui-Sinakarind Branch, and other bank executives in front of Bua Restaurant on Sinakarind Road, owned by Mrs. Anchalee Osathanugroh.



# A foundation based on moral values and principles



Thai Danu Bank was established out of a need to urgently provide an adequate banking system to support a boom in trade following the advent of World War II.

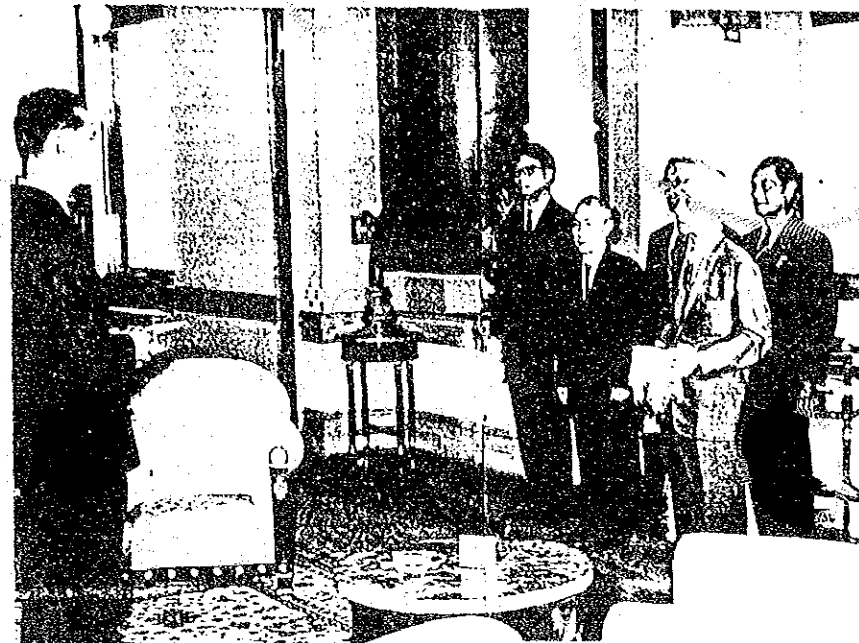
During this period of reconstruction, Thailand quickly resumed its foreign trade links which were severed due to wartime hostilities. The Kingdom's business volume gradually increased and this trade expansion would in turn help develop the national economy. This required adequate financial services by a commercial banking system, but only four Thai-owned commercial banks then existed in Thailand.

To answer this desperate need for adequate financing of trade, a group of Thai entrepreneurs comprising royalty, prominent merchants, wealthy and highly respected individuals established the Thai Danu Bank on August 5, 1948 with a registered capital of 10 million baht, issuing 100,000 shares valued at 100 baht each.

## A STEADY PROGRAMME OF EXPANSION

Indeed as business prospered, Thai Danu has never looked back. Within six years the bank found it necessary to expand its head office and so purchased land and a building at a prime banking location on the corner of Mahachulalongkornrajavidyalaya and Yaowaraj roads in Phra Nakhon. His Highness Krommuen Pithayarap Pruiyakara, then Chairman of the Privy Council, graciously presided at the opening ceremonies on October 28, 1955.

Only six new branches were established during the first 20 years (1949-1969), since the Thai Danu Bank concentrated mainly on its regular clients, granting the bulk of its loans to businesses in Bangkok rather than those in the provinces. These branches were located in Lampang (1957), Patpong (1958), Rajprasong (1959), Rajawongse (1961), Yannawa (1964) and Patumwan (1967).



The Thai Danu Executive Committee presents a donation to Royal Charities during an audience with His Majesty the King on the occasion of the bank's 20th Anniversary. Earlier, on its 15th Anniversary, the bank also made a donation to Royal Charities.



His Holiness, Somdej Phra Ariyawongsa-Katayana, the Supreme Patriarch, presides over the foundation stone-laying ceremony of the Thai Danu Bank head office on Silom Road, January 22, 1971.



Her Royal Highness the Princess Mother is shown in an old photograph of the Thai Danu Bank head office on Wangburapha Road with Chairman M.L. Dej Sanitwongse.



Her Royal Highness the Princess Mother during a visit to the bank.



His Supreme Highness Prince Jumbala (centre), Chairman of the Thai Danu Bank, is shown receiving the Royal Seal presented to the bank on May 9, 1973 by the Royal Household Bureau.

The bank's first head office was located in Bangkok at 18-24 Phra Pitak Road, Si Yeak Baan Mor, Phra Nakhon, but the necessary banking licence was not issued until March 3, 1949. Her Majesty Queen Rambhai Bhamni graciously presided over the opening ceremony when the bank opened for business on April 8, 1949.

It should be interesting to note that the bank's monogramme was designed after the handwriting style of His Majesty King Chulalongkorn the Great (Rama V), while the bank's logo depicts children receiving money from Bangkok's guardian angel Phra Stam Deva Thiraj. The monogramme and logo were selected in the belief that they would bring prosperity to the bank.

The next ten years (1970-1979) saw another seven more branches in central and outer Bangkok: Ladprao (1971),

Bang Po (1972), Wang Burapa (1973), Sainamliap-Sukhumvit (1976), Ngarnwongwan (1978) and Bangkokla (1978).

On August 20, 1973, the bank moved to its present head office on Silom Road. Shortly before the new head office was opened, His Majesty the King bestowed on the bank the Royal Emblem — the Garuda — which was received with great honour and was seen by many as an omen of prosperity.

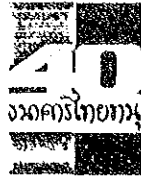
In response to the government's policy to develop the rural areas, Thai Danu Bank has expanded by opening more provincial branches between 1980 and 1988, first setting up branches in major provincial areas and gradually networking to cover more remote areas.

Sixteen branches were established during the period — six in Bangkok and 10 more in the provinces. The branches in

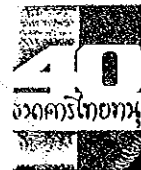
Bangkok which were established during this period were Sukhumvit 71 (1981), Thonglo (1983), Pantip Plaza (1984), Phrapinklao (1986), Ramkhamhaeng and On Nui-Srinakarind (1987). Provincial branches included Sampran-Nakhon Pathom (1981); Samrong (1982); Chachoengsao (1983); Thanon Changpuak and Thanon Prajag (1985); Niphat Uthit 3, Nava Nakhon and Lat Lum Kaeo (1986); Rayong (1987) and Chonburi (1988).

This year, the bank has already opened one Bangkok branch located at St. Louis Hospital and plans to open three more on Bangkhunthien-Rama II Road, Bang Na-Trat, and Rangsit. By the end of 1989, the total number of Thai Danu branches will be 20 in Bangkok and 13 in the provinces.





# SERVICE: The "Heart of the Bank"



The banking industry is integral to the economic and social development of a country and this is especially true for a rapidly developing country like Thailand. The mobilisation of deposits from the public sector and their decentralisation in the form of loans to the commercial and industrial sectors is part and parcel of a bank's commitment to the public.

Over the years, Thai Danu Bank has maintained its commitment "to provide only the best services to the Thai public" by constantly introducing new innovations and services into its business operations.

To this end, the bank has initiated a service development scheme designed to instil this concept into the minds of all its staff members. Since 1985, a series of campaigns were undertaken to promote the concept and improve bank services. For instance:

- In 1985, it set about upgrading services and developing its human resources;
- In 1986, it increased efficiency and developed its services;
- In 1987, it focussed on the development of its market and business potentials as well as improving the bank's internal preparedness;
- And in 1988, it focussed on developing more business and promoting its image as a bank which combines good service with

prompt and modern operations.

Aware that service is at the very heart of banking operations, Thai Danu Bank has set 1989 as the year when it would rank among Thailand's best, in terms of services. Consequently, it has organised special seminars for staff members at all levels.

## PRODUCT INNOVATIONS

And to provide the most convenient up-to-date services possible, the bank has introduced, among others, the talking ATM, attractively-designed cheques with photographic and floral backgrounds, special loans which can be extended to prospective buyers of real estate and housing, computers and even mobile telephones. It also offers loans for educational purposes, as well as loans for American Express cardmembers. It also issues drafts via SWIFT.

To provide the fullest possible range of services, the bank works in cooperation with four affiliates: Thai Insurance Co., Ltd., the Multi-Credit Corporation of Thailand Ltd., Ruam Dhanu Thai Co., Ltd. and the Thai Assessment Co., Ltd.



A first in Thailand: The talking ATM.

## PERSONNEL DEVELOPMENT

Apart from service, Thai Danu Bank considers human resources as one of the most vital factors in the banking business.

Since the ability to raise staff efficiency translates into higher productivity, the bank has launched a number of personnel development programmes to increase the efficiency of its staff and enable them to provide the highest-quality banking services available.

In addition to sending staff members to attend training courses and seminars — both locally and abroad — the bank

also conducts in-house training for staff members at all levels, while scholarships are offered to those who wish to further their studies. Quality Control activities, introduced to promote teamwork, has been accepted enthusiastically by its staff.

At the same time, the bank has improved its welfare scheme for staff members which today number 1,212, compared with only 22 in 1949. The scheme includes free medical benefits and the extension of educational assistance to children of bank employees, as well as a compensation system to suit the present economic situation.

## MANAGEMENT DEVELOPMENT

To cope with future growth, Thai Danu Bank has streamlined its management structure to enable it to expand banking services and increase its branches as well as decentralise business to rural areas.

Through management restructuring, the bank has been able to achieve quicker and more systematic operations. As part of this year's restructuring, the bank has decided to separate the Credit Administration Department from the Credit Department, elevate the status of the Fund Management Division to a Fund Management Office and has set up a new Special Projects Group.

At present, the bank has seven departments, four offices, 30 divisions, 98 sections and one special projects group.

## TECHNOLOGICAL DEVELOPMENT

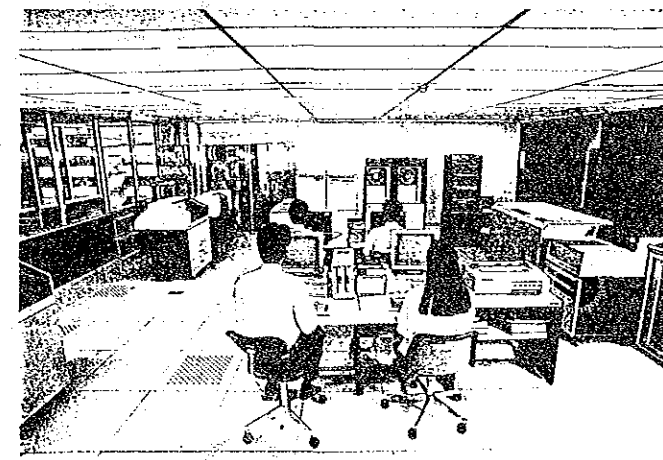
Increasing the efficiency of operations and services in both the metropolitan and provincial areas is of prime importance to Thai Danu Bank, and the bank always puts special emphasis on its technological development by acquiring the most modern banking system.

Today, the bank has fully developed data and information systems networked to all branches through its Automatic Teller Machines (ATMs) which is also linked to the BANKNET system. Installation of Thailand's first talking ATM and an on-line computerised deposit-withdrawal system have also been completed and is now available at all Thai Danu branches nationwide.

In 1989, the bank will continue to implement its technological development programme, increasing the efficiency of its "Talking ATMs" with the addition of three more languages.



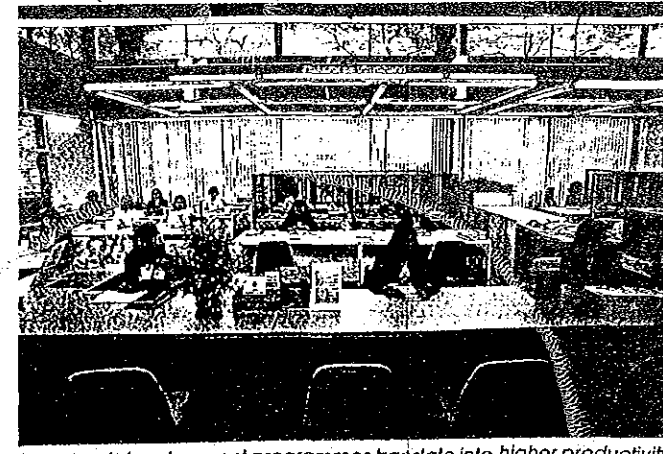
Personalised, efficient service are the keywords to Thai Danu's success.



Thai Danu's fully-computerised operations.



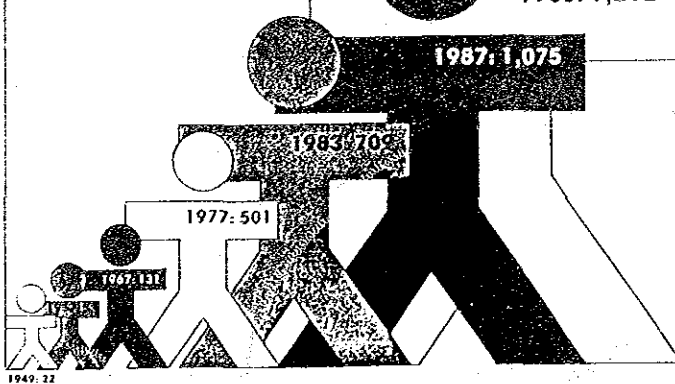
Bank executives attend intensive management courses.



Personnel development programmes translate into higher productivity and efficiency.

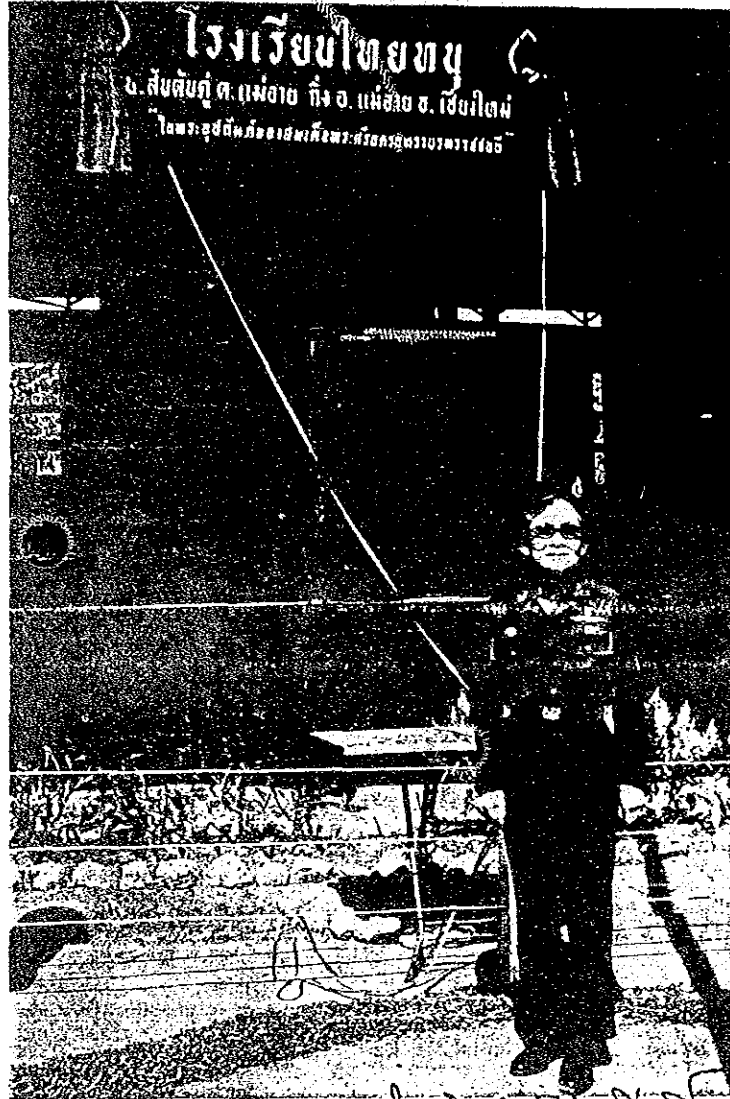
## PERSONNEL EXPANSION

IN 40 YEARS





# Social contributions



Her Royal Highness the Princess Mother presides over the opening of the Thai Danu School in Mae Ai district of Chiang Mai. Below is the Princess Mother's handwritten message thanking Thai Danu Bank for their assistance in building the school.

ขอแสดงความขอบคุณ Thai Danu Bank  
ที่ช่วยเหลือในการสร้างโรงเรียน

From the very day of its inauguration to the present, Thai Danu Bank has believed strongly in operating a just management system, fostering loyalty to the Kingdom's banking profession and living up to its responsibilities to the public as a good corporate citizen.

The bank's management and staff members today all adhere to this concept, pledging themselves to perform their duties with fidelity by conducting business in a responsible and professional manner, taking into account the needs of their clients.

Thai Danu Bank's professionalism and its strict adherence to banking rules and regulations has resulted in the bank being well accepted by the Thai public and generally regarded as among the most secure and reliable financial institutions in the Kingdom.

This in turn has helped boost the morale of staff members and has allowed the bank to proceed with confidence in expanding its operations.



The bank also helps to raise funds for charity. Its latest project was the puppet show of noted artist Chakraphand Posayakrit (left) who is shown here with Thai Danu Bank Senior Vice-President Mr. Khan Prachuabmoh.

# The ideal corporate citizen



## COMMUNITY DEVELOPMENT

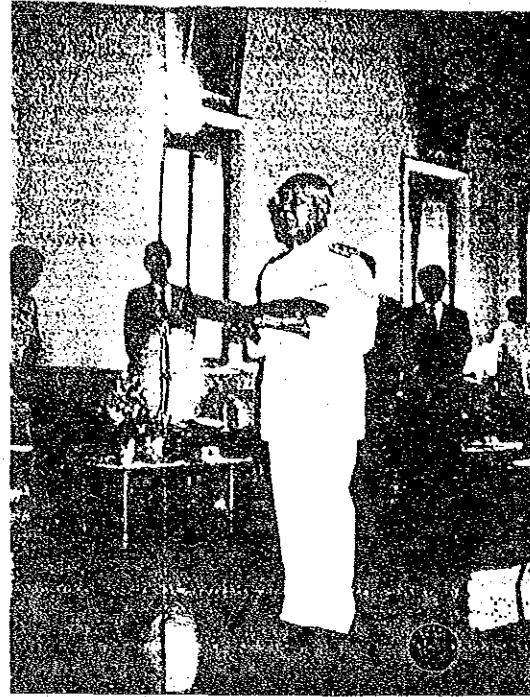
In addition to providing banking services to the Thai public, Thai Danu Bank has always been keenly aware of its social responsibilities. The bank has been at the forefront in staging various social and charitable activities with the assistance of its staff members and the Thai Danu Foundation.

The bank also regularly sponsors religious activities including such merit-making ceremonies such as *lod pha pa* and *lod kathin* to raise money to repair or build new temples.

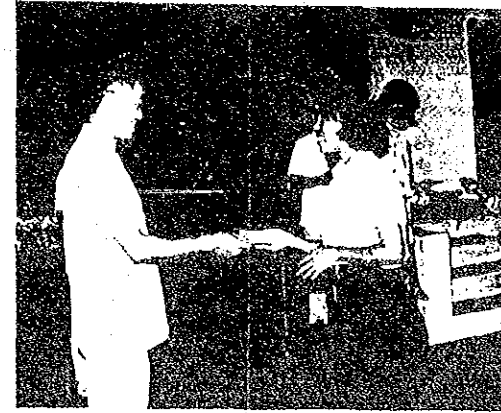
One noteworthy activity to promote education is the establishment of the Thai Danu School in Mae Ai District in Chiang Mai Province. The school is under the Royal Patronage of H.R.H. the Princess Mother. The bank also awards regular scholarships to students from various educational institutions around the Kingdom.

This social consciousness also extends to various other social functions such as promoting Thai arts and culture, rural health care and rural development. One recent event in which Thai Danu took an active part, and one which will long be remembered by the Thai public, is the Thai puppet show by noted artist Chakraphand Posayakrit.

Over the years, the bank has provided financial support and has helped to raise funds for projects and charities to benefit the Foundation for the Blind, the Ruam Jit Nom Klao Foundation, the Anti-Narcotics Foundation, the Buddha Monthon Construction Project, the Rama IX Royal Park Project, the Ramathibodi Foundation and the Puey Ungpakorn Foundation.



Last year's annual *Tod Kathin* ceremony sponsored by the bank.



Thai Danu offers scholarship grants to secondary and undergraduate students.



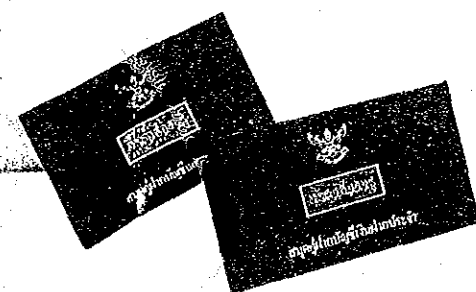
Staff members enjoy a full range of medical benefits.



A much-awaited annual event is the "Sports Day" in which the bank's executives and staff members join in a full day of sports activities and games.



Thai Danu Bank President Mr. Pakorn Thavisin presents an awards to one of the "1988 outstanding employees of the year."







# THAI DANU BANK

## branches in the Bangkok area

### Si Yak Soi On Nuj (Srinakarind Branch)

36/10 Sukhumvit 77,  
Prakhanong, Bangkok.  
☎ 321-6924 - 7

### St. Louis Hospital Branch

215/5 South Sathorn Road,  
Yannawa, Bangkok  
☎ 212-6300 - 2

### Thonglo Branch

103 Sukhumvit 55 Road, Bangkok.  
☎ 390-0437 - 40

### Pantip Plaza Branch

604/3 Petchburi Road, Bangkok.  
☎ 252-3603, 252-6339

### Wang Burapa Branch

933 corner Mahachai,  
Jawaraj Road, Bangkok.  
☎ 21-5121 - 3, 222-6583

### Palpong Branch

3 Palpong Road, Bangkok.  
☎ 233-5021, 233-7921 - 2,  
233-9020, 235-2319

### Phrapinklao Branch

632/137 Charansidvongse Road,  
Bangkok.  
☎ 433-5406 - 7

### Rajprasong Branch

153 Rajdamri Road, Bangkok  
☎ 253-0067 - 8, 253-9755 - 7

### Rajawongse Branch

261 Rajawongse Road, Bangkok.  
☎ 221-0599, 222-0478

### Yannawa Branch

2094 New Road, Bangkok.  
☎ 289-1132, 289-2612

### Patumwan Branch

186/5-7 Siam Square Soi 7,  
Rama 1 Road, Bangkok.  
☎ 251-2232, 251-3797,  
251-7672, 252-5856, 252-6049

### Ladprao Branch

166/10-12 Ladprao Road, Bangkok.  
☎ 511-3982 - 3, 513-4052, 513-5186

### Bangkae Branch

381 Petchkasem Road, Bangkok.  
☎ 413-0922 - 3

### Bang Po Branch

215/176-177 Pracharat 1 Road,  
Bangkok.  
☎ 585-2323, 585-5796

### Si Yak Thanon Bang Khun Thian — Thanon Rama II Branch

(Scheduled to open this year)



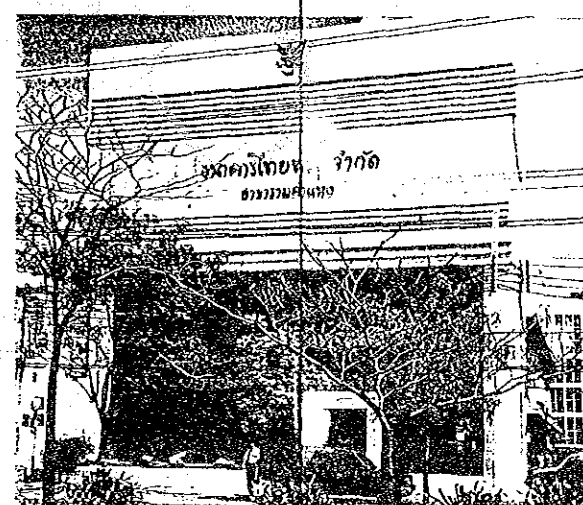
St. Louis Hospital branch



Phrapinklao Branch



Si Yak Soi On Nuj (Srinakarind Branch)



Ramkhamhaeng Branch

### Sainamtip — Sukhumvit Branch

570-574 Sukhumvit Road, Bangkok.  
☎ 258-0047 - 8

### Ramkhamhaeng Branch

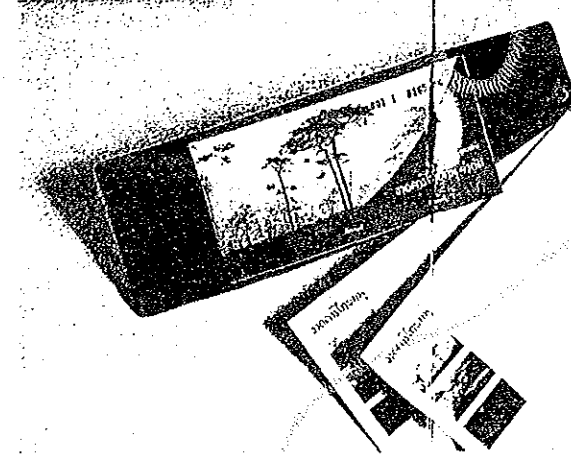
3333-9 Ramkhamhaeng Road,  
Bangkapi, Bangkok.  
☎ 377-2892 - 3, 375-7931 - 2

### Ngamwongwan Branch

207/133-134 Ngamwongwan Road,  
Bangkhen, Bangkok.  
☎ 589-3228, 589-5294

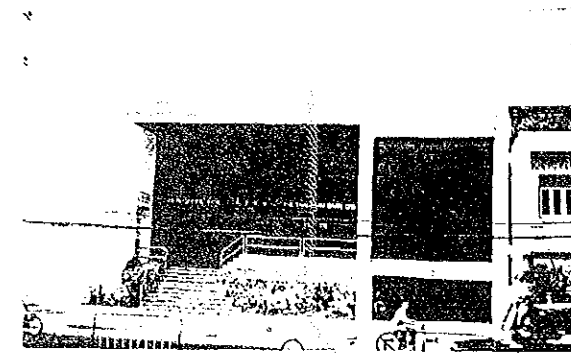
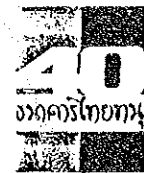
### Sukhumvit 71 Branch

349 Sukhumvit 71 Road,  
Klongton, Bangkok.  
☎ 391-6514, 391-6785, 392-0312 - 3



# THAI DANU BANK

## provincial branches



Chonburi Branch



Thanon Changpuak Branch



Lampang Branch

### Lampang Branch

399/1 Chattrchai Road, Lampang.  
☎ 217-125, 217-417 (054)

### Thanon Changpuak Branch

171/21 Changpuak Road,  
Chiang Mai  
☎ 211-061 - 2 (053)  
Fax. 211-545 (053)

### Chonburi Branch

870 Sukhumvit Road,  
Muang Province, Chonburi  
☎ 273-579 - 80 (038)  
Fax. 273-578 (038)

### Thanon Prajag Branch

129/6-9 Prajag Road,  
Nakorn Ratchasima  
☎ 252-644, 252-665 (044)  
Fax. 252-602 (044)

### Niphat Uthit 3 Branch

155-159/1 Niphat Uthit 3 Road,  
Hat Yai, Songkhla  
☎ 244-187, 244-324 (074)  
Fax. 237-858 (074)

### Nava Nakorn Branch

100 Phaholyothin Road,  
Pathum Thani  
☎ 529-0086 - 7  
Fax. 529-0416

### Lai Lum Kaeo Branch

27 Pathum Thani — Lai Lum  
Kaeo Road, Pathum Thani  
☎ 523-8819

### Rayong Branch

140/10 Sukhumvit Road, Rayong  
☎ 613-908 (038)  
Fax. 613-284 (038)

### Bangkhla Branch

100 Rabeapki Anusorn Road,  
Bangkhla, Chachoengsao  
☎ 541-123 (038)

### Sampran Branch

21/9 Petchkasem Road,  
Sampran, Nakorn Pathom  
☎ 311-285, 311-885 (034)

### Samrong Branch

1584/4-7 Sukhumvit Road,  
Samrong, Samul Prakan  
☎ 394-5858 - 9

### Chachoengsao Branch

219/10 Maha Chakrabhadh Road,  
Chachoengsao  
☎ 511-912 (038)

### Rangsit Branch

(Scheduled to open this year)



15. Information Circular他(ESCAP)





Secretariat

ST/IC/89/58  
5 September 1989

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INFORMATION CIRCULAR

To: Members of the staff

From: The Assistant Secretary-General for General Services

Subject: SOFTWARE PRODUCTS FOR MICROCOMPUTERS

1. In administrative instruction ST/AI/355 of 7 September 1988, the Technological Innovations Board established guidelines for the acquisition, use and support of microcomputers. As indicated in paragraph 21 of that instruction, the Office Automation Service maintains a list of software products which are supported by that Service. Support in this instance includes assistance with the acquisition of appropriate software packages, the installation of software packages and trouble-shooting, in case problems arise in the operation of a software package. The present circular gives microcomputer users information on packages currently supported by the Office Automation Service.

2. If an office requires software which is not mentioned below, the Office Automation Service will assist with the selection and acquisition of such software. However, in such cases, it is the responsibility of the individual office to arrange for the technical support and training for such software. It is important to note that all copies of software packages residing on microcomputers owned by the Organization must have been purchased and loaded in accordance with copyright laws. The personal computer user must be able to show proof that software on the machine was legally acquired.

3. The guidelines state that all personal computer applications must run under the MS/DOS operating system. MS/DOS was chosen because it is the most widely used microcomputer operating system and because the Office Automation Service has extensive experience with it. Although there are many different types of personal computer programs, most of the Organization's work is concentrated in the eight areas which are described below.

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4. Word processing programmes allow one to edit and print documents, memoranda and typed material by computer. A review of word-processing packages is under way by a special Task Force of the Technological Innovations Board which will make recommendations for standards in this area. Pending the recommendations of the Task Force, the Office Automation Service is supporting the personal computer version of the WANG IWP. The Wang software has limitations on the size of the page and more sophisticated features such as multiple-column output are not supported. Therefore, if a user needs more features than the Wang editor can provide, the Office Automation Service will install and support the WORDPERFECT package.

5. Spreadsheet packages support processing of financial and numerical data, with simple or complex calculations performed. For many years LOTUS 1-2-3 has been the choice of many users. The Office Automation Service will install and support Lotus. It also supports a package called "QUATTRO". The Quattro software provides the same functions as Lotus, with the advantage of a superior user interface. All Lotus functions and macros are supported in Quattro, and all Lotus files can be read directly without conversion.

6. Data base software permits management of one's own files in a structured environment. The original dBASE II software set the standard for data base software, followed by dBASE III and dBASE IV. The Office Automation Service has fully supported the various releases of dBASE. It also supports the PARADOX data base program. Paradox is a fully relational data base package which supports all of the same functions as dBASE. The Paradox software is generally much simpler for the novice personal computer user to understand and use. It supports import and export of dBASE files and provides the ability to develop customized applications in much the same way as in dBASE.

7. Graphics capability permits the display and printing of high-quality graphs and charts from structured data. In this area the Office Automation Service is currently supporting the HARVARD GRAPHICS package. It allows import from various other popular data management programs with Lotus formats.

8. Desk-top publishing facilitates high-quality output of documents, graphics and structured data. For desk-top publishing there are two products, VENTURA PUBLISHER and PAGEMAKER, which are both excellent, and are supported in a basic way by the Office Automation Service. The Technological Innovations Board has established a task force which will probably recommend that one of these products be selected as the organizational standard later this year.

9. Communications software permits linkage to other computers to run programmes not resident on one's own machine. The Office Automation Service supports one product for each generic type of communication. For communication from the personal computer to the IBM mainframe, the Office Automation Service supports the IRMA 2 software (which also involves installation of a communications card). For communications to the Wang VS minicomputers, the Service supports the DPZ 2110 terminal emulation software. For communications to computers outside the Organization, the Service supports CROSSTALK.

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10. Local area networks (LAN) enable personal computer users to share resources, such as files, printers and communications lines. For personal computer LANs, the Office Automation Service will support only one of the major LAN operating systems. A study is under way to determine which one will be selected by the Electronic Services Division. Electronic mail within LAN environments will be supported using one of several products which will run in the LAN environment supported by the Office Automation Service.

11. Utility programs allow the user to do hard-disk management and other housekeeping tasks. FASTBACK is excellent for doing rapid back-up onto diskette of one's critical files. For disk management the Office Automation Service recommends the NORTON ADVANCED UTILITIES. Although the Service has loaded the WANG SYSTEM SERVICES for user menus on most machines, the NORTON COMMANDER can be used instead as an intelligent interface to MS/DOS. To do landscape printing on the Hewlett-Packard Deskjet printers, the Service supports the SIDEWAYS package.

12. All of the software packages supported by the Office Automation Service have accompanying documentation. Some also provide on-line tutorials as a part of the package and, in some cases, videotaped instruction is also available. Subject to the availability of its own resources, the Training Service will organize training courses for all packages supported at this time by the Service.

13. However, in order to meet the urgent and vast needs of the Organization for training of staff in office automation, at this time the Training Service is organizing courses on a departmental basis in a priority order negotiated between the departments and the Training Service. Departments interested in scheduling training for their staff should address their requests to the Training Service. Individual staff members who want training should contact their executive offices to establish their need for such training and to ensure that they are included in their department's request to the Training Service.

14. None of the information contained in the present circular is intended to imply any endorsement by the United Nations of any product mentioned above.



Secretariat

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ST/AI/355  
7 September 1988

ADMINISTRATIVE INSTRUCTION

To: Members of the staff

From: The Under-Secretary-General for Administration and Management

Subject: GUIDELINES FOR THE ACQUISITION, USE AND SUPPORT  
OF MICROCOMPUTERS IN THE UNITED NATIONS

INTRODUCTION

1. Pursuant to paragraph 3 of the Secretary-General's bulletin ST/SGB/219 of 4 June 1986, the Technological Innovations Board has established guidelines for the acquisition, use and support of microcomputers, as outlined below, which will apply effective immediately to all departments and offices at Headquarters. The present instruction should be read in conjunction with administrative instruction ST/AI/339 of 3 April 1987. The guidelines can also serve as a reference for the United Nations offices away from Headquarters in establishing local policies for the acquisition of microcomputers. The guidelines will be reviewed in one year, taking into account changes in technology to determine whether a revision should be issued.

A. Why guidelines are necessary

2. The personal computer is becoming the workstation of choice, replacing typewriters, word-processing terminals and computer terminals because of its relatively low cost and high degree of functionality. As such, the microcomputer has an enormous impact on methods of work in the Organization. It is therefore necessary to establish a set of standard products from which departments must select, in much the same way that telephones, typewriters and other office equipment are standardized for the Organization. Personal computers must be capable of interfacing with other computing equipment already in the Organization, such as the large mainframe computer at Headquarters, as well as departmental minicomputers which replace earlier dedicated word-processing equipment.



3. There is currently no clear consensus from users as to what personal computers products they should acquire. The issuance of guidelines helps to minimize their uncertainty. More importantly, it enforces a uniformity of equipment from office to office, ensures compatibility and facilitates the transfer of data from one user to another. Finally, standardization allows for better support from the Office Automation Service, Electronic Services Division, Office of General Services.

B. Advantages of personal computers

4. A personal computer has the following advantages:

(a) It is small but, like larger computers, can have a variety of devices which provide input, processing and output capabilities. A typical configuration consists of a processor, a keyboard, a video display unit, one or several data storage devices (floppy-disk drives, hard disk, cartridge units) and a printer. Other specialized peripherals are available, such as plotters or specialized graphics;

(b) The personal computer ensures privacy and confidentiality, particularly when operated in a stand-alone mode, without connections to other computers. It can easily be installed in existing offices; it requires minimal space and generally no special electrical power or air-conditioning;

(c) There is available a wide variety of software packages which allows the personal computer to be used primarily with purchased software rather than with programs developed in-house. Present software design provides a high level of user-friendliness, speed, flexibility and easy tailoring of applications with specialized software packages. Specialized applications such as graphics applications, desk-top publishing and dissemination of data bases are well-supported;

(d) It provides a low-cost alternative to non-intelligent computer terminals and word-processing workstations. At Headquarters, any new microcomputer must be able to receive add-on boards to operate as a standard terminal on departmental or mainframe computers. According to the needs of users, it will be able (through one cable and one machine per office) to have access to any of applications resident on departmental and/or mainframe systems together with down-loading and up-loading facilities.

C. Proper utilization of personal computers

5. As with any tool, a personal computer can be inappropriately used or underutilized because of false expectations about its capabilities, or because there may be no worthwhile applications which can be run on it. To avoid these potential problems, the Office Automation Service will request the user office to provide an indication of how the equipment will be used and why the office considers the personal computer to be a cost-effective solution. This review, which will be undertaken jointly by the Office Automation Service and the office

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concerned, may also assist in limiting unnecessary duplication of applications which may have already been implemented in other offices

6. Lack of expertise to develop the necessary applications, resulting from an inadequate training programme, will seriously limit the use of personal computing equipment. Any new acquisition of personal computer equipment and/or software must therefore also be accompanied with a commitment by the requesting office to train the staff member(s) who will be using the equipment, whether through in-house or external courses or through self-study tutorials.

#### I. PERSONAL COMPUTER APPLICATIONS

7. The use of personal computers for analyses, personal data files (using spreadsheets or data base packages) and a number of other more specialized tasks (project planning, for example) is one of the greatest benefits of this relatively new technology. Any personal computer purchased must have the capability to run packages developed for the DOS operating system, which is the standard for the business environment.

8. Any personal computer system purchased must also be able to support user-written programs in the case where third-party packages will not meet the requirements for a particular application. Generally this is not a problem, since most vendors provide compilers for programme development. Equally important is the ease of use of the personal computers operating system and the ability of the programmer to set up the personal computer so that the application can be easily started up by the end user.

9. Most users of personal computers will want to do some word processing, either in conjunction with their spreadsheet or data base work, or as a stand-alone activity. A standard for word processing, established in 1984 and scheduled for review in 1989, supports typing in three of the official languages of the United Nations, (English, French and Spanish) on word-processing equipment currently installed. The current standard word-processing software can be installed on a microcomputer.

10. Of great interest of late has been the use of personal computers for electronic publishing. A number of specialized software packages have appeared on the market which have provided microcomputer users with the ability to produce fully composed masters ready for photo-reproduction.

11. The ability to communicate with larger computer systems can often be an important aspect of the personal computer. Any personal computer purchased should have the capability to perform this type of activity, and therefore be equipped with a telecommunications port. A number of reliable software packages for communications exist which allow the personal computer user to dial up other computers offering various proprietary services.

12. Through special interface hardware, it is possible to connect personal computers to departmental office automation systems located throughout the

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Organization. Currently, the Office Automation Service is in the process of gradually replacing the dedicated word-processing equipment with new equipment, which, in addition to word-processing software, supports enhanced communications and limited departmental data processing. When a personal computer is connected via local communications to a departmental minicomputer, the personal computer can operate like a standard minicomputer workstation; it is then possible to upload and download files and documents from the minicomputer to the personal computer.

13. Likewise, when a direct personal computer-to-mainframe connection is desired, it is possible to connect a microcomputer to the Headquarters mainframe computer through the addition of special hardware and software. However, a personal computer connected to the department's minicomputer can log on to the mainframe computer since all departmental processors have a mainframe connection through the Office Automation Service's local area network.

14. Microcomputers can be connected through a local area network (LAN) in order to share files, printers and telecommunications facilities. This technology supports the interconnection of microcomputers and the connection of personal computer equipment to the mainframe and minicomputers.

15. Personal computers are best employed where the scope and data volume of the application is limited. Generally, this includes processing of data or text by an individual or, at most, a small group of people. Larger applications will, most likely, need to be situated on a larger processor, either departmental or mainframe. It is recommended that the Information Management Service, Electronic Services Division, be consulted to evaluate any significant new applications.

## II. STANDARD CONFIGURATIONS FOR PERSONAL COMPUTERS AND SUPPORTED SOFTWARE

16. There are currently many personal computer manufacturers in the marketplace. However, this number can be reduced significantly if one takes into account the fact that a de facto standard had been set in the industry based on world-wide success of International Business Machines (IBM) in the business sector. This eliminates the vendors that cater to the home computing market. It is safe to assume that all "serious" applications packages will have a version available for the IBM personal computer. The question of which internal processor is installed by the manufacturer to drive the personal computer is critical, because it is the processor which determines the speed of the machine. The processor installed also determines which type of operating system can be run on it. The choice of operating system, in turn, regulates what features can be supported by the individual applications packages.

17. The current industry-standard personal computer, referred to as an AT-type machine, employs an 80286 processor chip. A newer, faster version of the 80286 processor, the 80386, is becoming more widely used. The 80386-based machines are appreciably more expensive than the 80286 types. Both processor types are used in a new line of microcomputers which utilize a design referred to as Micro Channel Architecture (MCA). It is worth noting that the MCA-type equipment does not

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currently offer any functional advantages over the AT-type, although, in tests done by the Office Automation Service, the MCA-type equipment ran slightly faster than the comparable 80286-based AT-type machines. Because of this functional equivalence, the MCA-type computers will be considered on the same basis as all conventional AT-type equipment for purposes of obtaining competitive bids during the acquisition process.

18. The DOS operating system is currently preferred for all of the IBM and compatible personal computers. A new operating system, called OS/2, is being developed for most machines which utilize the 80286 and 80386 processors and will be available sometime in 1988. It is worth noting that OS/2 will run on any vendor's 80286-based machine, including the AT and compatibles, provided that these machines have an adequate internal memory to run OS/2.

19. At the present time, the Office Automation Service supports five standard configurations for organizational use (see annex I to the present instruction). These configurations relate to the amount of flexibility required of the personal computer as a standard workstation, from a simple stand-alone to more complex situations where the personal computer is part of a networking scheme.

#### List of standard personal computer products

20. The Office Automation Service maintains a list of standard products which are supported, together with an estimate of the current cost of each item. This listing will be updated as required and made available as necessary to user offices. The list of standard products is by no means exhaustive. It does, however, contain items that have been fully tested by the Office Automation Service, and, as such, can be installed by a user office with the assurance that they will present relatively few problems in terms of installation, use and support. By and large, the list contains items that are popular with personal computer users in general and that represent good value for their cost.

21. As with personal computer hardware, the Office Automation Service has also established a standard list of software products which are supported. An office may, of course, need to purchase a package which is not on the standard list in order to be able to perform special functions not provided for in any of the standard products. The Office Automation Service will approve the acquisition of non-standard software products where these are warranted, but it will not be in a position to support them once purchased unless the necessary resources are forthcoming.

### III. ACQUISITION AND SUPPORT OF PERSONAL COMPUTERS

22. When new microcomputer equipment is to be ordered, the Office Automation Service will work with the requesting office and, when necessary, with the Information Management Service, Electronic Services Division, to ensure that a viable configuration is obtained. The Office Automation Service will review the requirements for equipment and/or software. This review will include the intended

uses of the equipment, the number and types of microcomputers and other computing equipment already installed in the department, the resources available for microcomputer purchase, and the overall plans for future equipment acquisitions in the requesting office. On the basis of this assessment, the Office Automation Service will recommend the most appropriate configuration of hardware and software.

23. After deciding what equipment and software to purchase, the requesting office must complete the form set out in annex II to the present instruction, "Request for purchase of personal computer equipment and/or software", and submit it to its executive or administrative officer who must certify that funds are available for that purchase. The form should then be sent to the Director of the Electronic Services Division, who will forward it to the Office Automation Service. Once the Office Automation Service approves the request, it will place a requisition with the Commercial, Purchase and Transportation Service for the items requested.

24. Items not on the standard list may be requested by an office; however, before submitting a formal request, clearance for their acquisition should first be obtained from the Office Automation Service in order not to delay projects or work which is dependent on personal computers.

25. Once the requested items have been ordered, a copy of the request form indicating the order information and the expected delivery date will be transmitted to the requesting office. If any electrical wiring or cabling for networking is required for the installation, it is incumbent on the office to request this service from Buildings Management Service at this point. The Office Automation Service will advise on the type of cabling or electrical work to be done by Buildings Management Service. If the networking plans involve use of the telephone system, a request for telephone service (form COM.10) should be placed with the Telecommunications Service, Electronic Services Division.

26. When the equipment arrives, the Office Automation Service will arrange for it to be delivered to the requesting office and will install the hardware, the operating system and any application packages that have been ordered. It is the user's responsibility to ensure that a suitable training programme has been provided for users of the personal computer. This should be done through a departmental trainer where available, or through the Training Service, Office of Human Resources Management, with the advice of the Office Automation Service.

27. The Office Automation Service is responsible for the maintenance of all personal computers purchased for the Organization. At the beginning of the calendar year, appropriate arrangements will be made by the Office Automation Service to ensure that each office will obtain timely service on all standard equipment.

28. The Office Automation Service maintains a "hot line" for users to report all problems with office automation equipment. Hours of service and telephone numbers of this facility are available on request from the Office Automation Service.

29. It is the responsibility of personal computer users to take the necessary precautions so that data integrity and security are preserved. The Office

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Automation Service can advise users on setting up procedures to ensure that data are secure, and that back-up copies are available in case of a machine failure.

30. It is recommended that each office assign a staff member to serve as a personal computer co-ordinator. This person should receive a full training programme for the use of the personal computer in the user office, and would serve as the liaison between the user office and the Office Automation Service on all questions relating to personal computers.

Annex I

PERSONAL COMPUTER CONFIGURATIONS SUPPORTED AT HEADQUARTERS

The five configurations currently supported by the Office Automation Service are as follows:

Configuration No. 1. A stand-alone personal computer with the following general characteristics:

- Display unit, either monochrome or colour;
- Keyboard, United Nations trilingual or standard English;
- 80286 processor; 80386 processor optional;
- 640 K memory (RAM), minimum;
- Hard disk, minimum 20 MB;
- Floppy diskette drive, 360 MB or 1.2 MB (5.25")
- Parallel and serial ports for printer, mouse, etc;
- Enhanced Graphics Adapter (EGA) for colour, if required;
- DOS operating system;
- Applications packages, as required.

Configuration No. 2. A personal computer as described in configuration No. 1, which is networked to other personal computers through networking hardware and software added to the processor. Personal computers in a network may be designated as print servers (personal computers that print for other personal computers), file servers (personal computers that hold files for other personal computers) and telecommunications servers (where the server personal computer may access other computers for other personal computers in the network). Due to the complexity of local area networks of personal computers, the Office Automation Service will need to advise on the specific implementation, since this will involve special wiring, local area network (LAN) hardware and software, and training in the use of the network. It is currently expected that the newly installed telephone system will be capable of being used to network personal computers.

Configuration No. 3. A personal computer as described in configuration No. 1, which is connected to a departmental/office minicomputer using special hardware and software.

Configuration No. 4. A personal computer as described in configuration No. 1, which is connected to the Headquarters mainframe computer with special hardware and

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software installed, using either existing coaxial cable or the telephone system to connect to the Headquarters mainframe computer.

Configuration No. 5. A portable personal computer suitable for an official on mission or for use in areas where electrical power is unreliable. Since the display units on these machines tend to be inferior to a standard visual display unit, and the keyboards are less roomy, they should not be used for permanent installations. A portable personal computer can be used to transfer data to a standard personal computer using an electronic linkage (diskettes may not always be suitable since most portables use 3.5" diskettes, whereas the most used diskette is 5.25").



## Annex II

## REQUEST FOR PURCHASE OF PERSONAL COMPUTER EQUIPMENT AND/OR SOFTWARE

|   |   |   |
|---|---|---|
| PART 1 - TO BE COMPLETED BY REQUESTING OFFICE   |   |   |
| Requestor's name  | Telephone no.                               |   |
| Department (or office)  |   |   |
| Division and unit   |   |   |
| Applications foreseen (use separate sheet, if needed)   |   |   |
| Justification of purchase (use separate sheet, if needed)   |   |   |
| Configuration (established in co-ordination with Office Automation Service)   |   |   |
| 1. <input type="checkbox"/> STAND-ALONE PC (S)  | 2. <input type="checkbox"/> NETWORK: PC LAN | 3. <input type="checkbox"/> NETWORK: PC TO VS |
| 4. <input type="checkbox"/> NETWORK: PC TO IBM HOST   | 5. <input type="checkbox"/> PORTABLE        | Number of processors required:                |
| Select the specific equipment and software to be ordered from the standard list of PC products and list your selection(s) on a separate sheet of paper. |   |   |
| Training plans (use separate sheet, if needed)  |   |   |
| Total estimated cost:   |   |   |
| Name of responsible official:   |   |   |
| Signature: _____  |   | Date: _____                                   |
| PART 2 - TO BE COMPLETED BY CERTIFYING OFFICER (executive or administrative)  |   |   |
| Account to be charged:  | Maximum allowable expenditure:              |   |
|   |   |   |
| Name of executive/administrative officer:   |   |   |
| Signature: _____  |   | Date: _____                                   |
| PART 3 - TO BE COMPLETED BY OAS   |   |   |
| Date requisitioned  | Case no.                                    | Revised cost                                  |
| P.O. no.  | Expected delivery date                      | Installation date                             |

## DIVISION OF ADMINISTRATION (Cont'd)

|                                | <u>Ext.</u> | <u>Room</u> | <u>Residence</u> |                        | <u>Ext.</u> | <u>Room</u> | <u>Residence</u> |
|--------------------------------|-------------|-------------|------------------|------------------------|-------------|-------------|------------------|
| <u>DATA PROCESSING SECTION</u> |             |             |                  | <u>LIBRARY</u>         |             |             |                  |
| Acting Chief                   |             |             |                  | Chief                  |             |             |                  |
| Mr. Robert Siegel              | 1281        | S-0211      | 2529303          | Mr. N.P. Cummins       | 1332        | S-0108      |                  |
| Administrative Assistant       |             |             |                  | Librarian              |             |             |                  |
| Ms. Kanda Visuddhi             | 1238        | S-0209      |                  | Ms. Somwong            | 1328        | S-0102      | 2828826          |
|                                |             |             |                  | Changkasiri            |             |             |                  |
| Clerks/Typists                 |             |             |                  | Administrative Clerk   |             |             |                  |
| Mr. Athon                      | 1250        |             |                  | Ms. Siriporn           | 1332        | S-1 F1      |                  |
| Tharatipyakul                  |             |             |                  | Slisatkorn             |             |             |                  |
| Ms. Wittayaporn                | 1250        |             |                  |                        |             |             |                  |
| Swangptheo                     |             |             |                  |                        |             |             |                  |
| Computer Room                  | 1223        | S-0205      |                  | <u>User Services</u>   |             |             |                  |
| DL 2800635                     |             |             |                  | UN/ESCAP Documentation |             |             |                  |
| User Facility                  | 1250        | S-0207      |                  | Ms. Deirdre Tanvinich  | 1341        | S-1 F1      | 3913484          |
|                                |             |             |                  | Ms. Pochana Dhippayom  | 1344        | S-1 F1      |                  |
| <u>Computer Operations</u>     |             |             |                  | Serials                |             |             |                  |
| Computer Operators             |             |             |                  | Ms. Vatanavalee        | 1326        | S-1 F1      | 5142601          |
| Supervisor                     |             |             |                  | Sinthuphan             |             |             |                  |
| Mr. Anake                      | 1223        | S-0205      | 4246307          | Ms. Chanthanom         | 1338        | S-1 F1      | 4682698          |
| Chavananonda                   |             |             |                  | Manophars              |             |             |                  |
| <u>Software Services</u>       |             |             |                  | General Reference      |             |             |                  |
| Programmer/Analyst             |             |             |                  | & Processing           |             |             |                  |
| Ms. Yasuko Mizuno              | 1248        | S-0219      | 2412669          | Ms. Marasri            | 1360        | S-1 F1      | 3934265          |
|                                |             |             |                  | Wongratana             |             |             |                  |
| Programme                      |             |             |                  | Mr. Janintr            | 1330        | S-1 F1      | 2772804          |
| Ms. Malinee                    |             |             |                  | Chalitpathanangune     |             |             |                  |
| Pattabongse                    | 1283        | S-0221      |                  | Acquisitions           |             |             |                  |
|                                |             |             |                  | Ms. Van Ngarm          | 1334        | S-1 F1      | 5112543          |
| <u>Technical Services</u>      |             |             |                  | Bhurahongse            |             |             |                  |
| <u>and Training</u>            |             |             |                  | EBIS & Reference       |             |             |                  |
| Programmer                     |             |             |                  | Ms. Mallika            | 1399        | S-1 F1      | 2119072          |
| Mr. Roland Tauber              | 1241        | S-0215      |                  | Phagapas-vivat         |             |             |                  |
| Computer Expert                |             |             |                  | Computer Clerk         |             |             |                  |
| Mr. Art                        |             |             |                  | Ms. Kosum              | 1335        | S-1 F1      |                  |
| Wichiencharoen                 | 1252        | S-0213      | 2414167          | Guerdmeatrapaya        |             |             |                  |

## DATA PROCESSING SECTION

### FACILITIES AND SERVICES

The Data Processing Section provides computing, office automation and data communications software and hardware services, training and support. The Section is organized into the Computer Operations Unit, Software Services Unit and Technical Services Unit. Its facilities include a computer room and the PC Centre and Reading Corner.

#### Computer room

The computer room houses an NEC System 350 mainframe and two minicomputers, an IBM System/36 and a WANG VS-15. A fire-proof safe is available for storing backup copies of diskettes, machine-readable tapes and disks.

The NEC System 350 is used to process ESCAP's larger computer applications, such as the payroll, accounts, bibliographic information and trade information systems.

The IBM System/36 is used primarily for data entry of administrative data. It is also used to connect IBM-compatible personal computers at ESCAP to the United Nations telecommunications network.

The Wang VS-15 is used primarily for word processing. It is also used to connect Wang equipment at ESCAP to the United Nations telecommunications network.

Terminals and personal computers at ESCAP connected to the IBM System/36 and the WANG VS-15 have access via satellite to databases and software at the New York Computing Service (NYCS) at United Nations Headquarters and the International Computing Centre (ICC) in Geneva. The connections permit the interchange of electronic messages, documents and data with the rest of the United Nations system.

#### PC Centre

The PC Centre has a variety of IBM, Wang and IBM-compatible microcomputers, printers and special microcomputer devices, and an extensive collection of standard microcomputer software together with manuals. The PC Centre is open to the ESCAP secretariat for shared use. Scheduled training is provided through the Centre on various topics, including an introduction to microcomputers and microcomputer software. Training is also available on request.

The PC Centre has the following collection of microcomputer software:

|                       |                                     |
|-----------------------|-------------------------------------|
| Computer-aided design | Autocad                             |
| Database management   | CDS/ISIS, dBASE IV, Oracle, Paradox |
| Desktop publishing    | Ventura Publisher, Page Maker       |

|                        |  |
|------------------------|--|
| Electronic spreadsheet | Lotus 1-2-3, Microsoft Exel  |
| Graphics               | Chart-Master, Diagram-Master,<br>Harvard Graphics, Lotus Freelance Plus,<br>Map-Master, PC Storyboard, Sign-Master             |
| Project management     | Harvard Total Project Manager,<br>Microsoft Project, Time Line   |
| Statistical analysis   | SPSS   |
| Wordprocessing         | Lotus Manuscript, Microsoft Word,<br>Tian Ma (Chinese), WordPerfect, Wordstar<br>(French and Russian to be obtained in future) |

Much useful software from the public domain is also available.

Special hardware in the PC Centre includes a high-speed Compaq 386/25 microcomputer, an image scanner, a laser printer, a plotter, a 9-track tape drive and image projectors. A local area network (LAN) is also installed.

The Compaq 386/25 is suitable for tasks that would otherwise consume excessive time to process on an average microcomputer, or that require especially large amounts of disk storage.

The image scanner is handy for copying pictures, diagrams, maps, etc. for further processing by desktop-publishing or graphics software. The image scanner also serves to copy text from typewritten documents for use with wordprocessing and other software.

The laser printer is used in conjunction with desktop-publishing software to produce high-quality reports and newsletters while the plotter can be utilized by computer-aided-design and map-generation software for the high-speed production of colour maps and engineering drawings, including floor plans.

The 9-track tape drive is a convenient bridge for interchanging data between microcomputers and mainframes. The PC Centre also has facilities for converting data into various diskette formats.

The PC Centre has several microcomputer-image projectors, which can be used during demonstrations and training to project the contents of a microcomputer screen for general viewing by large audiences.

### Reading Corner

Computer magazines and newspapers, such as Computerworld, Byte, PC Magazine and Datamation are on display at the Reading Corner. The Data Processing Section separately maintains a collection of software and hardware users' manuals and reference guides for its mainframe, minicomputers and microcomputers.

### IDAR Service

The Data Processing Section subscribes to the IDAR (International Databases and Remote Computing) Service, an international data communications service provided by the Communications Authority of Thailand (CAT). Through IDAR, a microcomputer equipped with a modem and communications software can connect at nominal charge to thousands of host computers around the world.

### Software and technical services

Staff of the Data Processing Section are available to assist offices to plan for the acquisition of hardware and software and the development of computer applications. Subsequently, they are available to help with installation and to provide on-going technical guidance and support. For further information on the full range of software and technical services offered, please call ext. 1238.

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Note: Some of the items of hardware and software mentioned above have been delayed in delivery, but are expected shortly.

30 June 1989

A.D/07

24 July 1989

A.D/43

Number of staff trained by the Data Processing Section  
in the use of microcomputer software  
January - August 1989

| Office                 | Data base | Spread sheet | Word processing | Graphics | Operating system | CDS/ISIS Bibliographic |
|------------------------|-----------|--------------|-----------------|----------|------------------|------------------------|
| Administration         |           |              |                 |          |                  |                        |
| Commercial Activities  | -         | -            | 3               | -        | -                | -                      |
| Data Processing        | 12        | 14           | 15              | 12       | 15               | -                      |
| Library                | -         | -            | 4               | -        | 4                | -                      |
| Property Management    | 2         | 2            | 1               | -        | 3                | -                      |
| Registry               | -         | 2            | -               | -        | 4                | -                      |
| Agriculture            | -         | -            | 1               | -        | -                | -                      |
| Development Planning   | -         | -            | 1               | -        | -                | -                      |
| Industry               | -         | -            | 1               | -        | -                | -                      |
| PCMO                   | 9         | 8            | 9               | -        | 9                | -                      |
| Social Development     | -         | 5            | 1               | -        | -                | 20 <sup>1/</sup>       |
| Technical Co-operation | 8         | 10           | 15              | -        | 15               | -                      |

1/ Participants at the Workshop on Management of  
Women's Information Centres

NEC SYSTEM 350

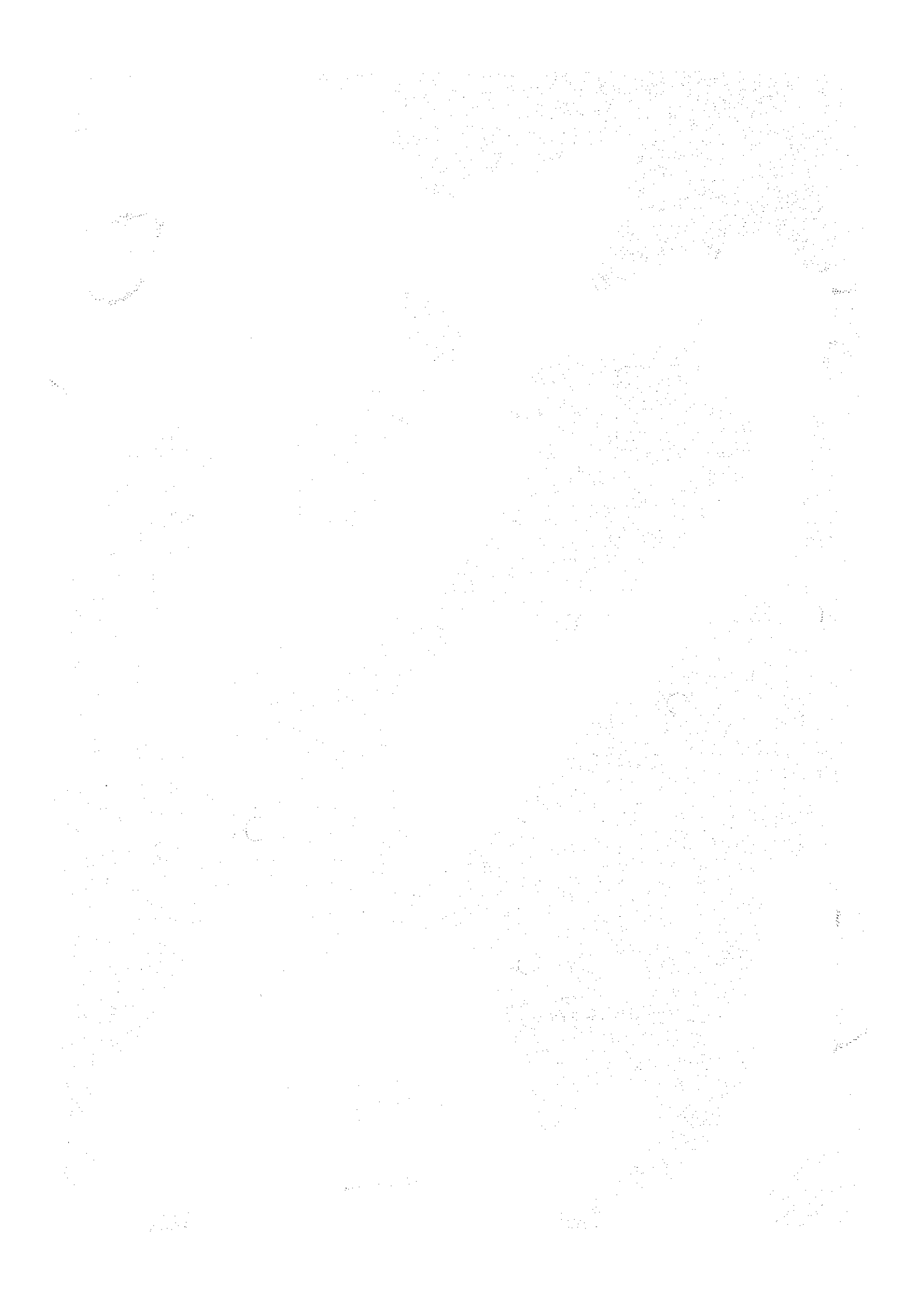
A. Summary

Computer: NEC System 350 mainframe  
Installed: March 1981  
Last hardware upgrade: May 1985  
Value of all hardware: US\$ 1,384,000  
Annual maintenance: US\$ 69,624  
Main memory size: 3 MB  
Direct Access Storage: 1435 MB (800 removable, 635 fixed)  
Tape Drives: 5 9-track, 1 7-track  
Number of magnetic tapes: 3,800  
Printers: 2 line printers; 460/930 lpm  
Terminals: 13 on-line, 2 off-line, with 11 printers;  
2 dual-station stand-alone data-entry machines  
Operating system: ACOS-4  
Proprietary software packages: IRS-4 (bibliographic information storage  
and retrieval, SPSS (license terminal  
1986).  
Applications: administrative (accounts, payroll,  
personnel), bibliographic information  
storage and retrieval, compilation of  
economic and social statistics, economic  
modelling, tabulation of demographic  
surveys and censuses, tabulation of trade  
statistics





## 16. タイ国概況 (ジェットロ・バンコク・センター)



タイ王国概況

1989年版

ジェトロ・バンコク・センター  
バンコク日本人商工会議所

10/24  
JETRO バンコクより  
入手

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本書に対するご照会は下記あてに

ジェトロ・バンコク・センター 経済動向分析部 細谷 章 TEL 253-6441-5

## タイ王国概観

|             |  |   |
|-------------|--|---|
| 1. 国土       | 位置   | 北緯5-21度、東経97-106度(インドシナ半島の中央部に位置し、カンボジア、ラオス、ビルマ、マレーシアの4国と国境を接する。) |
|             | 面積   | 51万3000Km <sup>2</sup> バンコク首都圏面積 1,565.2Km <sup>2</sup>           |
| 2. 人口       | 5,496万人(1988年12月31日)、増加率 2.0%<br>人口密度 107人/ Km <sup>2</sup>  |   |
| 3. 首都<br>地方 | バンコク(人口 572万人 同上)、人口増加率 2.0%<br>チェンマイ16万人、コーラート21万人、コンケン13万人、ハジャイ13万人  |   |
| 4. 気候       | 熱帯モンスーン気候<br>バンコクの気候 雨季6~10月頃、乾季11~5月頃 最高気温40度<br>最低気温15度、年平均湿度76.3%、年間雨量 2,129mm  |   |
| 5. 民族・言語    | タイ族が約8割。他民族は華人系(全体の1割、うち潮州系が6割)を筆頭にマレー人(南部)、カンボジア人、インド人、ベトナム人及び山岳民族等<br>公用語 タイ語 なお、ラオス語もタイ語に似ている。  |   |
| 6. 宗教       | 憲法で信教の自由を保障。国民の約95%は仏教徒(南方上座部仏教、仏僧約30万人、仏教寺院約3万4000)、以下回教徒約4%、キリスト教徒 約0.6%   |   |
| 7. 教育       | 義務教育6年(初等)、1978年から6-3-3-4制<br>就学率 初等(7-12才)95.8%中学(13-15才) 34.5%、高校(16-18才)24.7%、大学等(19-24才)7.7%(1986年現在)。1988年ユネスコ推計の識字率91%   |   |
| 8. 保健医療     | 病院数891、医師数9,464人、10万人当たり18人。<br>平均寿命は男61.75才、女67.5才(日本は75.23才、80.93才)  |   |
| 9. 政体       | 立憲君主制(1932年憲法公布)   |   |
| 10. 王室      | チャクリ(ラタナコシン)王朝 1782年チャクリ将軍(ラマ1世)が創設<br>現国王 プーミボン・アデウヤデート陛下(チャクリ王朝9世、ラマ9世、1946年6月10日即位、1927年12月5日生、87年に還暦を盛大に祝賀)。シリキット王妃との間にウボンラッタナー王女、ワチラロンコーン皇太子、シリントーン王女、チュラポーン王女の一男三女がある。<br>国王は、神聖不可侵の元首であり、国軍を統率するほか、仏教の信奉者である旨、憲法で規定されている。88年7月4日在位最長位を記録。 |   |
| 11. 国会      | 二院制、上院は任命制(267人、6年任期、2年ごとに半数改選、下院は、選挙制(357人、4年任期)。必ず政党に所属する義務がある(但し、首相は除く)与党が下院全議席の3分の2を占める。法案は下院に提出、三読会制度<br>選挙は全国73県142選挙区。  |   |

|          |   |
|----------|---|
| 12. 内閣   | 首相 チャチャイ・チュナハーン(タイ国民党党首)(1922年4月5日生、67才)<br>1988年8月4日就任) 8月9日組閣でタイ国民党87議席、社会行動党54議席、<br>民主党48議席、民衆党21議席、連合民主党5議席、大衆党5議席(計220議席)<br>の保守6党から成る連立政権。<br>* 80年からプレム内閣(第5次)、88年4月29日国会解散、7月24日総選挙実施  |
| 13. 外交   | 首相は「インドシナ半島を戦場から貿易の場に」を提唱し、カンボジアからの<br>ベトナム撤兵も間近。反ベトナム三派連合(民主カンボジア連合政府)<br>支持、自由主義国との協調、ASEAN、中国との友好関係を強化   |
| 14. 軍事   | 反政府ゲリラを主対象にした軍備から近代的装備を有する外国軍に対抗<br>する軍備への移行を急いでいる。総兵力25万6000人うち陸軍16万人(4軍管<br>区、7個歩兵師団ほか)、海軍4万2000人、空軍4万8000人)。義務兵役制で<br>18~30歳の男子は原則2年間の兵役に服する義務がある。   |
| 15. 対日関係 | 両国は600年以上の通商関係を有す。87年9月26日、日タイ修好宣言100周年<br>対日赤字が12億ドル→24億ドル(88年)に急増。投資急増(199件→389件)<br>日本のODAはタイのODA総額の66.7%(86年、二国間)。<br>主要無償援助: 青少年福祉センター、タマサート大日本研究センター、社会<br>教育文化センター、排水・洪水予防事業、累計1,208億円。技術協力200名超<br>主要円借款事業: 大半の発電所、首都圏橋梁、通信設備、首都高速道路、東部<br>臨海開発等)第1次→14次円借款累計7,518.57億円(含輸銀328億、交換公文) |

#### 14. 日本との比較(1988年)

| 主な項目                       | 日本①       | タイ②     | ②÷①  |
|----------------------------|-----------|---------|------|
| 1. 国土面積 (Km <sup>2</sup> ) | 377,781   | 513,115 | 1.36 |
| うち農地面積                     | 53,635    | 199,088 | 3.71 |
| 首都圏面積                      | 2,166     | 1,565   | 0.72 |
| 2. 人口 (1000人)              | 122,783   | 54,961  | 0.45 |
| うち首都圏内                     | 11,890    | 5,717   | 0.48 |
| 人口密度 (人/Km <sup>2</sup> )  | 325       | 107     | 0.33 |
| うち首都圏内                     | 5,489     | 3,653   | 0.67 |
| 3. 国民総生産(100万ドル)           | 2,863,300 | 57,888  | 0.02 |
| 1人当り国民総生産(ドル)              | 23,358    | 1,043   | 0.04 |
| 4. 輸出額(100万ドル)             | 264,917   | 15,873  | 0.06 |
| 輸入額(100万ドル)                | 187,354   | 19,444  | 0.10 |
| 5. 米10Kg、円(1バーツ=5.2円)      | 5,000     | 500     | 0.10 |
| 6. 初任給(円)                  | 120,000   | 15,600  | 0.13 |

# タイ王国主要経済指標

## 1. 国民所得統計

(GDP 百万 バツ、1人当りGDP バツ)

|                     | 1984           | 1985             | 1986             | 1987              | 1988(推)           | 1989(予)           |
|---------------------|----------------|------------------|------------------|-------------------|-------------------|-------------------|
| 実質GDP<br>同伸び率       | 380,738<br>7.1 | 394,113<br>3.5   | 411,814<br>4.5   | 446,361<br>8.4    | 495,374<br>11.0   | 537,481<br>8.5    |
| 名目GDP<br>同伸び率       | 973,412<br>7.0 | 1,014,399<br>4.2 | 1,094,679<br>7.9 | 1,234,030<br>12.7 | 1,465,736<br>18.8 | 1,663,610<br>13.5 |
| 1人当り名目GNP<br>同ドルベース | 18,968<br>802  | 19,287<br>710    | 20,364<br>774    | 22,599<br>878     | 26,412<br>1,043   | 29,921<br>1,182   |
| 人口                  | 5,071          | 5,168            | 5,265            | 5,361             | 5,460             | 5,560             |
| 為替レート               | 23.6392        | 27.1587          | 26.2987          | 25.7227           | 25.32             | 25.32             |

(出所) NESDB国民所得統計88年版。なお、89年以降の実質成長率を除く数字、  
1人当りGNPドルベースは当センターで試算。

(1) 名目GDPの支出別構成(1988年)  
(百万バツ、%)

|          |           |       |
|----------|-----------|-------|
| 総消費支出    | 1,057,189 | 72.1  |
| 民間       | 898,768   | 61.3  |
| 政府       | 158,421   | 10.8  |
| 総固定資本形成  | 377,790   | 25.8  |
| 建設支出     | 166,154   | 11.3  |
| 民間       | 103,329   | 7.0   |
| 政府       | 62,825    | 4.3   |
| 設備投資     | 211,636   | 14.4  |
| 民間       | 190,112   | 13.0  |
| 政府       | 21,524    | 1.5   |
| 在庫増加     | 25,331    | 1.7   |
| 財サービスの輸出 | 505,315   | 34.5  |
| 財サービスの輸入 | 530,825   | 36.2  |
| 統計上の誤差   | 30,936    | 2.1   |
| GDP      | 1,465,736 | 100.0 |

(2) 実質GDPの支出別伸び率

(%)

|         | 1986   | 1987   | 1988(推) |
|---------|--------|--------|---------|
| 総消費支出   | 4.0    | 6.4    | 8.8     |
| 民間      | 5.0    | 7.6    | 9.8     |
| 政府      | 0.2    | 1.1    | 4.2     |
| 総固定資本形成 | △ 4.2  | 13.2   | 17.7    |
| 建設支出    | △ 3.5  | 6.0    | 13.2    |
| 民間      | 5.2    | 22.7   | 15.9    |
| 政府      | △ 11.4 | △ 12.3 | 9.0     |
| 設備投資    | △ 4.8  | 19.1   | 21.1    |
| 民間      | △ 2.9  | 28.1   | 27.3    |
| 政府      | △ 11.6 | △ 15.4 | △ 15.7  |
| 在庫増加    | △ 1858 | 16183  | △ 159   |
| GDP     | 4.5    | 8.4    | 11.0    |

\* 在庫増加は実額、単位百万バツ  
\* 輸出入等は未発表

(3) 農業、製造業の品目別GDP付加価値額 (単位:100万バーツ)

|           | 1984    | 1985    | 1986    | 1987    | 1988 p  | 構成比   |
|-----------|---------|---------|---------|---------|---------|-------|
| 農林水産業     | 113,069 | 105,221 | 108,217 | 121,098 | 163,576 | 100.0 |
| ライス       | 43,156  | 39,952  | 37,522  | 43,619  | 68,990  | 42.2  |
| 生ゴム       | 9,304   | 10,623  | 12,408  | 16,740  | 22,227  | 13.6  |
| メイズ       | 7,524   | 6,446   | 4,295   | 3,914   | 11,108  | 6.8   |
| フルーツ      | 10,227  | 10,220  | 9,407   | 10,866  | 10,985  | 6.7   |
| キャッサバ     | 7,781   | 6,566   | 13,604  | 10,612  | 9,160   | 5.6   |
| 野菜        | 6,792   | 7,037   | 7,157   | 8,689   | 8,960   | 5.5   |
| 砂糖きび      | 7,544   | 4,313   | 5,878   | 5,255   | 7,218   | 4.4   |
| 大豆        | 1,207   | 1,458   | 1,595   | 1,761   | 3,450   | 2.1   |
| ココナッツ     | 3,155   | 1,930   | 1,758   | 2,053   | 2,303   | 1.4   |
| 生ペッパー     | 1,855   | 1,699   | 2,216   | 2,613   | 2,189   | 1.3   |
| 唐辛子       | 1,367   | 1,141   | 907     | 972     | 1,613   | 1.0   |
| パイナップル    | 1,907   | 1,456   | 1,163   | 2,102   | 1,348   | 0.8   |
| その他       | 11,250  | 12,380  | 10,307  | 11,902  | 14,025  | 8.7   |
| 製造業       | 218,050 | 224,456 | 255,029 | 295,512 | 357,851 | 100.0 |
| 食料品       | 34,301  | 34,732  | 33,258  | 32,809  | 39,325  | 11.0  |
| 飲料        | 19,154  | 21,035  | 20,981  | 23,566  | 26,018  | 7.3   |
| タバコ       | 11,170  | 11,447  | 12,136  | 12,750  | 13,477  | 3.8   |
| 織物        | 20,807  | 22,118  | 27,326  | 37,126  | 41,419  | 11.6  |
| ガーマント     | 26,917  | 30,365  | 35,513  | 44,211  | 50,425  | 14.1  |
| 皮革製品、靴    | 5,387   | 5,860   | 7,288   | 10,740  | 16,559  | 4.6   |
| 木・合板      | 5,176   | 5,168   | 5,432   | 6,593   | 9,447   | 2.6   |
| 家具        | 3,496   | 3,570   | 3,744   | 5,201   | 6,892   | 1.9   |
| 紙・紙製品     | 2,897   | 3,064   | 3,921   | 4,755   | 5,602   | 1.6   |
| 印刷・出版     | 3,424   | 3,570   | 3,668   | 3,988   | 4,689   | 1.3   |
| 化学・同製品    | 7,245   | 7,839   | 8,787   | 10,111  | 11,847  | 3.3   |
| 石油・同製品    | 13,590  | 15,150  | 25,677  | 19,078  | 22,122  | 6.2   |
| ゴム・プラスチック | 5,450   | 5,813   | 6,172   | 8,169   | 10,883  | 3.0   |
| 貴石・宝石     | 10,498  | 10,502  | 10,289  | 11,902  | 13,761  | 3.8   |
| 基礎金属製品    | 2,840   | 3,709   | 3,202   | 3,396   | 4,124   | 1.2   |
| 鉄板製品      | 5,839   | 6,250   | 6,552   | 7,459   | 8,705   | 2.4   |
| 一般機械      | 6,467   | 5,602   | 6,095   | 7,128   | 9,044   | 2.5   |
| 電気機械      | 6,608   | 5,938   | 7,656   | 8,377   | 9,911   | 2.8   |
| 輸送用機械     | 15,769  | 10,961  | 12,470  | 17,804  | 27,000  | 7.5   |
| その他工業製品   | 11,015  | 11,763  | 14,862  | 20,349  | 26,601  | 7.4   |

(出所) NESDB 国民所得統計88年版



(4)名目GDPの産業別構成(1988年)

(百万円、%)

|           |           |       |
|-----------|-----------|-------|
| 農林水産業     | 247,748   | 16.9  |
| 農業        | 163,576   | 11.2  |
| 畜産業       | 24,847    | 1.7   |
| 水産業       | 15,069    | 1.0   |
| 林業        | 9,311     | 0.6   |
| 鉱業、採石業    | 44,333    | 3.0   |
| 製造業       | 357,851   | 24.4  |
| 建設業       | 74,524    | 5.1   |
| 電力、水道     | 37,487    | 2.6   |
| 運輸、通信     | 106,834   | 7.3   |
| 卸小売り      | 232,231   | 15.8  |
| 銀行、保険、不動産 | 60,032    | 3.4   |
| 住宅保有      | 52,702    | 4.1   |
| 行政、国防     | 56,242    | 3.8   |
| サービス      | 195,752   | 13.4  |
| 計         | 1,465,736 | 100.0 |

(5)実質GDPの産業別増加率(1972年価格)

(%)

|           | 1986  | 1987  | 1988(推) |
|-----------|-------|-------|---------|
| 農林水産業     | 0.2   | △ 2.0 | 8.6     |
| 農業        | △ 4.6 | △ 4.6 | 12.3    |
| 畜産業       | 16.9  | 5.7   | 5.9     |
| 水産業       | 8.6   | △ 3.1 | △ 0.2   |
| 林業        | 8.7   | △ 5.6 | △ 4.6   |
| 鉱業、採石業    | △ 2.0 | 7.3   | 13.5    |
| 製造業       | 9.6   | 13.6  | 12.4    |
| 建設業       | △ 2.9 | 8.1   | 13.7    |
| 電力、水道     | 12.4  | 9.0   | 13.4    |
| 運輸、通信     | 7.2   | 8.3   | 10.8    |
| 卸小売り      | 4.5   | 11.5  | 13.2    |
| 銀行、保険、不動産 | 2.0   | 27.0  | 18.4    |
| 住宅保有      | 3.9   | 5.2   | 6.6     |
| 行政、国防     | 3.1   | 3.0   | 3.8     |
| サービス      | 4.8   | 10.4  | 9.5     |
| 計         | 4.5   | 8.4   | 11.0    |

## 2. 雇用・賃金

(1)労働力構成(1988年) (千人、%)

|         | 87年    | 88年    |
|---------|--------|--------|
| 人口      | 53,451 | 54,700 |
| 労働力人口   | 27,191 | 30,400 |
| 就業者     | 25,375 | 28,800 |
| うち農業人口  | 15,788 | -      |
| 非農業人口   | 9,587  | -      |
| 失業者     | 1,816  | 1,600  |
| 失業率     | 6.7    | 5.3    |
| 非労働力人口  | 11,850 | 10,300 |
| 11才以下人口 | 14,410 | 14,000 |

(2)産業別就業状況(1987年)

(千人、%)

|          |        |       |
|----------|--------|-------|
| 農林水産業    | 15,788 | 62.2  |
| 鉱業       | 94     | 0.4   |
| 製造業      | 2,537  | 10.0  |
| 建設業      | 690    | 2.7   |
| 電気・ガス・水道 | 135    | 0.5   |
| 商業       | 2,756  | 10.9  |
| 運輸・通信    | 637    | 2.5   |
| サービス     | 2,738  | 10.8  |
| 計        | 25,375 | 100.0 |

(出所) 内務省労働局

(出所) 内務省労働局

(3)産業別月平均賃金(未熟練労働者)

(円)

|      | 1982  | 1986  |
|------|-------|-------|
| 製造業  | 1,759 | 2,229 |
| 建設   | 1,671 | 2,241 |
| 卸売り  | 1,910 | 2,390 |
| 小売り  | 1,884 | 2,069 |
| サービス | 1,883 | 2,167 |
| 金融   | -     | 2,526 |
| 全産業  | 1,776 | 2,264 |

(4)最低賃金額の推移

(円、パーセント)

| 発行年月    | バンコク<br>首都圏 | 中央部・<br>南部 | 北部・<br>東北部 |
|---------|-------------|------------|------------|
| 1980 10 | 54          | 47         | 44         |
| 1981 10 | 61          | 52         | 52         |
| 1982 10 | 64          | 61         | 52         |
| 1983 10 | 66          | 63         | 56         |
| 1985 1  | 70          | 65         | 59         |
| 1987 4  | 73          | 67         | 61         |
| 1989 1  | 76          | 69         | 63         |
| 1989 4  | 78          | 70         | 65         |

### 3. 日系企業の賃金動向

#### (1) 日系企業（製造業）の初任給

[上段は労務者、中段:事務系、下段:技術系] (単位:パーツ)

|              | P6 小卒 | MS3中卒 | MS5高卒 | MS6職専 | TCS高専 | U 大学  |
|--------------|-------|-------|-------|-------|-------|-------|
| 自動車          | 1,890 | 2,154 | 2,475 | 2,608 | ---   | ---   |
|              | ---   | 2,213 | 2,310 | 2,674 | 3,176 | 4,282 |
|              | ---   | ---   | ---   | 2,713 | 3,199 | 4,499 |
| 同上関連         | 2,069 | 2,123 | 2,187 | 2,517 | ---   | ---   |
|              | ---   | 2,226 | 2,699 | 2,665 | 3,183 | 4,287 |
|              | ---   | ---   | ---   | 2,532 | 3,097 | 4,686 |
| 電気機械         | 1,904 | 1,989 | 1,981 | 2,364 | ---   | ---   |
|              | ---   | 1,971 | 2,089 | 2,565 | 2,965 | 4,288 |
|              | ---   | ---   | ---   | 2,561 | 3,097 | 4,686 |
| 繊維           | 1,972 | 2,000 | 2,259 | 2,604 | ---   | ---   |
|              | ---   | 2,173 | 2,738 | 3,073 | 3,378 | 4,072 |
|              | ---   | ---   | ---   | 3,220 | 3,574 | 4,360 |
| 化学           | 2,122 | 2,182 | 2,315 | 2,388 | ---   | ---   |
|              | ---   | 2,270 | 2,299 | 2,786 | 3,046 | 4,641 |
|              | ---   | ---   | ---   | 2,662 | 3,309 | 4,923 |
| 金属加工等        | 2,005 | 2,098 | 2,298 | 2,415 | ---   | ---   |
|              | ---   | 1,908 | 2,480 | 2,844 | 3,338 | 4,863 |
|              | ---   | ---   | ---   | 3,125 | 3,600 | 5,400 |
| その他製造        | 2,178 | 2,123 | 2,348 | 2,656 | ---   | ---   |
|              | ---   | 2,130 | 2,398 | 2,698 | 3,242 | 4,272 |
|              | ---   | ---   | ---   | 2,798 | 3,310 | 4,757 |
| 平均<br>(単純平均) | 2,020 | 2,096 | 2,266 | 2,504 | ---   | ---   |
|              | ---   | 2,127 | 2,431 | 2,758 | 3,190 | 4,386 |
|              | ---   | ---   | ---   | 2,802 | 3,310 | 4,757 |

(出所) 1988年賃金実態調査から当センターで集計

(注) 月額 本採用時 基本給のみ

#### (2) 自動車メーカーの平均賃金

(単位:パーツ)

|     | 基本給   | 手当    | オーバー  | 計      |
|-----|-------|-------|-------|--------|
| 労務者 | 3,863 | 978   | 2,043 | 6,884  |
| 事務系 | 6,284 | 1,422 | 1,607 | 9,313  |
| 技術系 | 7,719 | 1,670 | 1,976 | 11,365 |

(出所) 1988年賃金実態調査から当センターで集計

(注) 自動車及び同関連企業を対象に集計。月額

## 4. 物 価

### (1) 消費者物価指数

(1976=100、%)

|     | 1984                     | 1985                     | 1986                    | 1987                    | 1988                    | 1989(予)        |
|-----|--------------------------|--------------------------|-------------------------|-------------------------|-------------------------|----------------|
| 総合  | (0.9)<br>189.5<br>(△1.1) | (2.4)<br>194.1<br>(△2.5) | (1.9)<br>197.7<br>(1.1) | (2.5)<br>202.6<br>(1.8) | (3.8)<br>210.4<br>(5.1) | (4.5)<br>219.9 |
| 食料  | 183.4<br>(2.1)           | 178.9<br>(3.9)           | 180.8<br>(2.6)          | 184.1<br>(2.7)          | 193.5<br>(3.2)          |                |
| 非食料 | 191.2<br>(2.4)           | 202.3<br>(5.8)           | 207.5<br>(2.3)          | 213.0<br>(2.6)          | 219.7<br>(2.8)          |                |
| 衣料  | 184.3<br>(3.9)           | 191.5<br>(6.9)           | 196.0<br>(5.3)          | 201.0<br>(3.5)          | 206.7<br>(2.7)          |                |
| 住居  | 191.9<br>(3.3)           | 205.1<br>(3.7)           | 216.0<br>(0.9)          | 223.5<br>(1.6)          | 229.5<br>(1.0)          |                |
| 医療  | 185.6<br>(0.2)           | 192.4<br>(7.1)           | 194.2<br>(△2.7)         | 197.4<br>(0.6)          | 199.3<br>(2.6)          |                |
| 交通  | 232.9                    | 249.5                    | 242.7                   | 244.2                   | 250.5                   |                |

\* ( ) 内は前年(同期)比

### (2) 生産者物価指数

(1976=100、%)

|              | 1984                      | 1985                      | 1986                       | 1987                     | 1988                     | 1989(予)        |
|--------------|---------------------------|---------------------------|----------------------------|--------------------------|--------------------------|----------------|
| 総合           | (△3.1)<br>169.1<br>(△8.1) | (△0.1)<br>169.0<br>(△8.7) | (△0.4)<br>168.4<br>(2.8)   | (5.9)<br>178.4<br>(12.3) | (8.2)<br>193.0<br>(10.9) | (8.0)<br>208.4 |
| 農産物及び<br>食料品 | 155.2                     | 141.6                     | 145.6                      | 163.5                    | 181.4                    |                |
| 工業製品         | (△0.7)<br>179.2<br>(△4.5) | (2.6)<br>183.9<br>(0.1)   | (△3.2)<br>178.1<br>(△11.1) | (3.3)<br>184.0<br>(△4.9) | (5.9)<br>194.9<br>(0.8)  |                |
| 燃料           | 279.8<br>(0.4)            | 280.2<br>(2.0)            | 249.0<br>(△1.1)            | 236.8<br>(4.0)           | 238.8<br>(10.8)          |                |
| 建設財          | 184.2                     | 187.8                     | 185.7                      | 193.1                    | 211.0                    |                |

\* ( ) 内は前年(同期)比

## (3)消費者物価指数(四半期別)

(1276 \* 190)

| C.Y.   | ALL ITEMS |      | FOOD  |      | NON-FOOD |      | CLOTHING |      | HOUSING |      | PERSONAL AND MEDICAL CARE |      | TRANSPORTATION |      | RECREATION, READING AND EDUCATION |      | TOBACCO AND ALCOHOLIC BEVERAGES |      |
|--------|-----------|------|-------|------|----------|------|----------|------|---------|------|---------------------------|------|----------------|------|-----------------------------------|------|---------------------------------|------|
|        |           | GR.  |       | GR.  |          | GR.  |          | GR.  |         | GR.  |                           | GR.  |                | GR.  |                                   | GR.  |                                 | GR.  |
| 1990   | 155.9     |      | 155.3 |      | 148.4    |      | 149.9    |      | 145.7   |      | 140.4                     |      | 171.7          |      | 144.4                             |      | 125.3                           |      |
| 1991   | 172.1     | 10.4 | 171.0 | 10.6 | 169.5    | 11.2 | 161.0    | 10.0 | 165.1   | 13.6 | 163.5                     | 10.2 | 220.6          | 20.5 | 150.0                             | 10.1 | 139.6                           | 11.1 |
| 1992   | 181.1     | 5.2  | 176.0 | 2.0  | 181.0    | 7.3  | 173.9    | 5.5  | 177.0   | 7.2  | 174.1                     | 6.5  | 231.2          | 4.0  | 172.1                             | 0.2  | 164.1                           | 17.4 |
| 1993   | 187.9     | 3.9  | 185.5 | 5.0  | 186.7    | 2.7  | 180.5    | 3.0  | 184.7   | 4.4  | 179.6                     | 3.2  | 232.5          | 0.0  | 175.0                             | 2.1  | 150.0                           | -2.0 |
| 1994   | 189.5     | 0.9  | 183.4 | -1.1 | 191.2    | 2.4  | 184.3    | 2.1  | 191.9   | 3.9  | 185.6                     | 3.3  | 232.6          | 0.0  | 178.1                             | 1.3  | 159.6                           | -0.1 |
| 1995   | 191.1     | 2.4  | 178.9 | -2.5 | 202.2    | 5.0  | 191.5    | 3.9  | 205.1   | 6.9  | 192.4                     | 3.7  | 249.5          | 7.3  | 182.1                             | 2.2  | 170.5                           | 11.0 |
| 1996   | 197.7     | 1.9  | 180.8 | 1.1  | 207.5    | 2.6  | 196.0    | 2.3  | 216.0   | 5.3  | 194.2                     | 0.9  | 242.7          | -2.7 | 183.5                             | 0.8  | 166.0                           | 4.3  |
| 1997   | 202.6     | 2.5  | 184.1 | 1.3  | 213.0    | 2.7  | 201.0    | 2.6  | 223.5   | 3.5  | 197.4                     | 1.6  | 244.2          | 0.6  | 185.8                             | 1.3  | 197.2                           | 6.0  |
| 1998   | 210.4     | 3.8  | 193.5 | 5.1  | 219.7    | 3.2  | 203.7    | 2.8  | 229.6   | 2.7  | 199.3                     | 1.0  | 250.5          | 2.0  | 197.1                             | 6.1  | 204.0                           | 3.9  |
| 86.1-6 | 196.6     |      | 170.3 |      | 206.0    |      | 195.1    |      | 214.2   |      | 193.4                     |      | 246.1          |      | 183.1                             |      | 181.9                           |      |
| 7-12   | 198.8     |      | 181.8 |      | 208.2    |      | 197.0    |      | 217.9   |      | 195.0                     |      | 230.3          |      | 184.0                             |      | 187.0                           |      |
| 87.1-6 | 200.4     | 1.9  | 184.1 | 3.3  | 211.3    | 2.2  | 199.3    | 2.2  | 221.9   | 3.0  | 196.9                     | 1.8  | 242.7          | -1.4 | 183.6                             | 0.3  | 195.1                           | 5.5  |
| 7-12   | 204.8     | 3.0  | 187.1 | 2.9  | 214.6    | 3.1  | 202.6    | 2.9  | 225.1   | 3.3  | 197.8                     | 1.4  | 245.6          | 2.7  | 187.0                             | 2.2  | 199.4                           | 6.0  |
| 88.1-6 | 208.6     | 4.1  | 190.9 | 3.7  | 218.4    | 3.3  | 205.0    | 2.8  | 228.4   | 2.9  | 198.3                     | 0.7  | 240.3          | 2.3  | 195.9                             | 6.7  | 204.2                           | 3.9  |
| 7-12   | 212.4     | 3.7  | 190.0 | 4.8  | 221.3    | 3.1  | 208.0    | 3.1  | 231.2   | 2.7  | 200.4                     | 1.3  | 252.8          | 2.9  | 198.5                             | 5.6  | 205.5                           | 3.0  |
| 86.10  | 195.8     |      | 176.8 |      | 206.5    |      | 194.6    |      | 212.7   |      | 193.0                     |      | 249.6          |      | 182.7                             |      | 185.0                           |      |
| 20     | 197.3     |      | 179.7 |      | 207.1    |      | 195.7    |      | 215.6   |      | 193.0                     |      | 242.5          |      | 183.5                             |      | 184.9                           |      |
| 30     | 198.2     |      | 181.2 |      | 207.6    |      | 196.6    |      | 216.8   |      | 194.7                     |      | 238.6          |      | 183.9                             |      | 186.8                           |      |
| 40     | 199.4     |      | 182.3 |      | 208.8    |      | 197.4    |      | 219.9   |      | 195.3                     |      | 239.9          |      | 184.0                             |      | 187.2                           |      |
| 87.1Q  | 199.4     | 1.8  | 185.5 | 3.2  | 210.7    | 2.0  | 197.7    | 1.6  | 221.4   | 4.1  | 195.9                     | 1.1  | 241.5          | -3.2 | 183.7                             | 0.5  | 191.2                           | 5.0  |
| 2Q     | 201.4     | 2.0  | 182.6 | 1.6  | 212.0    | 2.3  | 200.9    | 2.7  | 222.3   | 3.1  | 197.0                     | 2.5  | 243.0          | 0.6  | 183.5                             | -0.0 | 195.9                           | 6.0  |
| 3Q     | 203.8     | 2.8  | 186.6 | 3.0  | 213.3    | 2.7  | 202.2    | 2.9  | 224.3   | 3.4  | 197.8                     | 1.6  | 245.0          | 2.7  | 184.2                             | 0.2  | 197.3                           | 5.7  |
| 4Q     | 205.8     | 3.2  | 187.6 | 2.9  | 215.9    | 3.4  | 203.0    | 2.9  | 226.0   | 3.2  | 197.9                     | 1.3  | 246.2          | 2.7  | 184.7                             | 4.1  | 201.5                           | 7.0  |
| 88.1Q  | 207.3     | 4.0  | 189.1 | 2.1  | 217.6    | 3.3  | 203.9    | 3.1  | 227.4   | 2.7  | 198.0                     | 1.1  | 247.7          | 2.6  | 195.2                             | 6.2  | 203.7                           | 4.9  |
| 2Q     | 209.5     | 4.0  | 192.9 | 5.6  | 218.7    | 3.2  | 205.2    | 2.1  | 228.8   | 2.9  | 198.3                     | 0.3  | 248.5          | 1.9  | 196.2                             | 5.9  | 204.8                           | 1.9  |
| 3Q     | 211.3     | 3.7  | 195.0 | 4.5  | 220.3    | 3.3  | 207.6    | 2.7  | 230.5   | 2.8  | 199.5                     | 0.9  | 250.7          | 2.3  | 197.3                             | 7.1  | 205.0                           | 3.9  |
| 4Q     | 213.4     | 3.7  | 197.0 | 5.0  | 222.3    | 3.0  | 210.1    | 3.5  | 231.9   | 2.6  | 201.4                     | 1.8  | 254.9          | 3.5  | 199.6                             | 4.2  | 205.9                           | 2.2  |
| 89.1   | 195.5     |      | 176.1 |      | 200.4    |      | 194.6    |      | 211.7   |      | 194.0                     |      | 252.9          |      | 182.4                             |      | 185.1                           |      |
| 2      | 195.5     |      | 176.5 |      | 200.2    |      | 194.5    |      | 211.7   |      | 193.8                     |      | 250.0          |      | 182.6                             |      | 185.0                           |      |
| 3      | 196.4     |      | 177.7 |      | 200.9    |      | 194.6    |      | 214.8   |      | 193.6                     |      | 245.2          |      | 183.2                             |      | 184.8                           |      |
| 4      | 196.8     |      | 178.4 |      | 207.1    |      | 195.4    |      | 215.3   |      | 193.0                     |      | 244.9          |      | 183.2                             |      | 184.8                           |      |
| 5      | 197.6     |      | 180.6 |      | 207.0    |      | 195.8    |      | 215.6   |      | 193.0                     |      | 241.1          |      | 183.5                             |      | 184.8                           |      |
| 6      | 197.6     |      | 180.2 |      | 207.2    |      | 195.8    |      | 215.9   |      | 193.0                     |      | 241.5          |      | 183.7                             |      | 185.0                           |      |
| 7      | 197.5     |      | 180.2 |      | 207.0    |      | 196.0    |      | 216.1   |      | 194.4                     |      | 238.5          |      | 183.7                             |      | 185.0                           |      |
| 8      | 198.2     |      | 181.3 |      | 207.5    |      | 196.4    |      | 216.4   |      | 194.8                     |      | 238.6          |      | 184.0                             |      | 187.8                           |      |
| 9      | 199.0     |      | 182.1 |      | 208.3    |      | 197.3    |      | 217.9   |      | 194.9                     |      | 238.8          |      | 184.0                             |      | 187.5                           |      |
| 10     | 199.6     |      | 183.6 |      | 208.3    |      | 197.4    |      | 217.8   |      | 195.3                     |      | 239.2          |      | 184.1                             |      | 187.1                           |      |
| 11     | 199.5     |      | 182.5 |      | 208.9    |      | 197.4    |      | 218.9   |      | 195.4                     |      | 240.2          |      | 184.0                             |      | 187.1                           |      |
| 12     | 199.1     |      | 180.8 |      | 209.3    |      | 197.4    |      | 220.0   |      | 195.3                     |      | 240.2          |      | 184.0                             |      | 187.5                           |      |
| 87.1   | 199.4     | 2.0  | 180.2 | 2.3  | 210.3    | 1.9  | 197.7    | 1.6  | 220.8   | 4.3  | 195.0                     | 0.8  | 240.7          | -4.8 | 184.2                             | 1.0  | 193.1                           | 4.3  |
| 2      | 199.3     | 1.9  | 179.1 | 1.5  | 210.8    | 2.2  | 197.7    | 1.6  | 221.6   | 4.7  | 196.0                     | 1.1  | 241.4          | 3.7  | 183.0                             | 0.7  | 194.6                           | 5.2  |
| 3      | 199.4     | 1.5  | 197.3 | 11.0 | 210.9    | 1.0  | 197.8    | 1.6  | 221.7   | 3.2  | 196.1                     | 1.3  | 242.5          | -1.1 | 184.3                             | 0.0  | 194.8                           | 5.4  |
| 4      | 200.3     | 1.8  | 180.8 | 1.3  | 211.5    | 2.1  | 199.9    | 2.3  | 222.1   | 3.2  | 197.4                     | 2.3  | 243.4          | -0.8 | 183.0                             | -0.1 | 194.8                           | 5.4  |
| 5      | 201.3     | 1.9  | 182.4 | 1.0  | 212.0    | 2.4  | 201.3    | 2.8  | 222.3   | 3.1  | 197.9                     | 2.5  | 243.6          | 1.0  | 183.6                             | 0.1  | 196.3                           | 6.2  |
| 6      | 202.5     | 2.5  | 184.7 | 2.5  | 212.4    | 2.5  | 201.5    | 2.9  | 222.6   | 3.1  | 198.2                     | 2.7  | 244.7          | 1.3  | 183.8                             | 0.1  | 196.7                           | 6.3  |
| 7      | 202.6     | 2.6  | 184.4 | 2.3  | 212.8    | 2.8  | 201.8    | 3.0  | 223.5   | 3.4  | 198.0                     | 1.9  | 244.8          | 2.6  | 183.8                             | 0.1  | 197.0                           | 6.5  |
| 8      | 203.8     | 2.8  | 186.4 | 2.8  | 213.4    | 2.8  | 202.1    | 2.9  | 224.5   | 3.7  | 197.7                     | 1.5  | 245.0          | 2.7  | 184.4                             | 0.2  | 197.5                           | 5.2  |
| 9      | 204.9     | 3.0  | 180.9 | 3.7  | 213.6    | 2.5  | 202.7    | 2.7  | 224.8   | 3.2  | 197.6                     | 1.4  | 245.2          | 2.7  | 184.4                             | 0.2  | 197.5                           | 5.2  |
| 10     | 204.7     | 2.6  | 187.5 | 2.1  | 214.1    | 2.0  | 202.0    | 2.0  | 225.5   | 3.5  | 197.0                     | 1.3  | 245.0          | 2.7  | 184.7                             | 0.3  | 198.3                           | 6.0  |
| 11     | 206.3     | 3.4  | 187.8 | 2.9  | 216.7    | 3.7  | 203.1    | 2.9  | 226.1   | 3.3  | 197.9                     | 1.3  | 246.3          | 2.5  | 195.1                             | 6.0  | 202.6                           | 0.3  |
| 12     | 206.4     | 3.7  | 187.5 | 3.7  | 217.0    | 3.7  | 203.1    | 2.9  | 226.4   | 2.9  | 198.0                     | 1.4  | 246.8          | 2.7  | 195.2                             | 6.1  | 203.6                           | 8.0  |
| 88.1   | 205.8     | 3.2  | 186.1 | 3.3  | 217.1    | 3.2  | 203.7    | 3.0  | 226.8   | 2.6  | 198.0                     | 1.2  | 247.6          | 2.9  | 194.7                             | 5.7  | 203.7                           | 5.3  |
| 2      | 207.7     | 4.2  | 189.8 | 6.0  | 217.6    | 3.2  | 203.0    | 3.1  | 227.4   | 2.6  | 198.0                     | 1.0  | 247.7          | 2.6  | 195.4                             | 6.3  | 203.7                           | 4.9  |
| 3      | 208.5     | 4.6  | 191.3 | -3.0 | 218.0    | 3.4  | 204.2    | 3.2  | 228.1   | 2.9  | 198.0                     | 1.0  | 247.9          | 2.2  | 195.5                             | 6.7  | 203.8                           | 4.0  |
| 4      | 209.2     | 4.4  | 192.7 | 6.6  | 218.3    | 3.2  | 204.9    | 2.5  | 228.3   | 2.6  | 198.2                     | 0.4  | 248.3          | 2.0  | 195.6                             | 6.9  | 204.7                           | 5.0  |
| 5      | 209.5     | 4.1  | 192.9 | 5.8  | 218.6    | 3.1  | 205.3    | 2.0  | 228.1   | 2.7  | 198.3                     | 0.2  | 248.5          | 2.0  | 196.5                             | 7.0  | 204.8                           | 4.5  |
| 6      | 209.8     | 3.6  | 192.9 | 4.4  | 219.2    | 3.2  | 205.4    | 1.9  | 229.6   | 3.1  | 198.5                     | 0.2  | 248.7          | 1.8  | 196.4                             | 6.9  | 204.9                           | 4.1  |
| 7      | 210.0     | 3.7  | 192.4 | 4.3  | 219.7    | 3.2  | 207.2    | 2.7  | 230.0   | 2.9  | 198.8                     | 0.4  | 249.1          | 1.0  | 197.1                             | 7.2  | 204.5                           | 3.8  |
| 8      | 211.0     | 3.5  | 194.5 | 4.3  | 220.1    | 3.1  | 207.3    | 2.8  | 230.6   | 2.7  | 199.0                     | 0.7  | 249.6          | 1.9  | 197.2                             | 6.9  | 204.8                           | 3.7  |
| 9      | 213.0     | 4.0  | 198.0 | 4.8  | 221.1    | 3.5  | 208.2    | 2.7  | 230.9   | 2.7  | 200.6                     | 1.5  | 253.4          | 3.3  | 197.6                             | 7.2  | 205.8                           | 4.2  |
| 10     | 214.0     | 4.5  | 198.9 | 6.1  | 222.0    | 3.7  | 209.8    | 3.4  | 231.5   | 2.7  | 201.2                     | 1.7  | 254.5          | 3.6  | 199.2                             | 7.9  | 205.7                           | 3.9  |
| 11     | 213.3     | 3.4  | 198.7 | 4.7  | 222.4    | 2.6  | 210.2    | 3.5  | 231.7   | 2.5  | 201.3                     | 1.7  | 256.3          | 4.1  | 199.7                             | 2.4  | 205.9                           | 1.0  |
| 12     | 212.9     | 3.1  | 195.4 | 4.2  | 222.6    | 2.6  | 210.3    | 3.5  | 232.4   | 2.7  | 201.7                     | 1.9  | 254.0          | 2.9  | 199.0                             | 2.4  | 206.2                           | 1.3  |

## 5. 貿易

### ①輸出入額の推移(ベース)

(百万円、%)

|    | 1983              | 1984              | 1985              | 1986              | 1987              | 1988(P)           | 1989(予)           |
|----|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 輸出 | (△8.3)<br>146,472 | (19.6)<br>175,237 | (10.3)<br>193,366 | (20.7)<br>233,383 | (28.5)<br>299,853 | (34.3)<br>402,838 | (26.4)<br>509,000 |
| 輸入 | (20.3)<br>236,809 | (3.6)<br>245,155  | (2.5)<br>251,169  | (△3.9)<br>241,358 | (38.5)<br>334,209 | (46.0)<br>487,871 | (33.2)<br>650,000 |
| 収支 | △90,137           | △69,918           | △57,803           | △7,975            | △34,356           | △85,033           | △141,000          |

(出所) BOT 月報及び 商務省貿易統計資料、89年の輸入額は当センター予想

### ②ドルベース

(百万円、%)

|    | 1983             | 1984            | 1985             | 1986            | 1987             | 1988(P)          | 1989(予)          |
|----|------------------|-----------------|------------------|-----------------|------------------|------------------|------------------|
| 輸出 | (△8.3)<br>6,368  | (16.4)<br>7,413 | (△4.0)<br>7,119  | (24.7)<br>8,877 | (33.4)<br>11,658 | (34.3)<br>15,910 | (27.0)<br>20,198 |
| 輸入 | (20.3)<br>10,287 | (0.8)<br>10,371 | (△10.8)<br>9,248 | (△0.7)<br>9,181 | (41.5)<br>12,994 | (48.3)<br>19,268 | (33.9)<br>25,794 |
| 収支 | △3,919           | △2,958          | △2,128           | △304            | △1,336           | △3,358           | △5,596           |

( ) 内は前年比、レトは 84年=23.64B/\$ 85=27.16 86=26.29 87=25.72 88=25.32 89=25.20

### (1)主要産品別輸出動向

(百万円、%)

|     | 1985               | 1986               | 1987               | 1988(P)            |
|-----|--------------------|--------------------|--------------------|--------------------|
| 農産物 | (38.0)<br>73,398   | (34.0)<br>79,397   | (27.8)<br>83,259   | (25.9)<br>104,514  |
| 水産物 | (5.5)<br>10,590    | (6.4)<br>14,853    | (6.1)<br>18,163    | (5.1)<br>20,466    |
| 鉱産物 | (5.2)<br>10,126    | (2.7)<br>6,283     | (2.0)<br>5,851     | (1.7)<br>6,767     |
| 工業品 | (49.4)<br>95,615   | (55.3)<br>129,170  | (62.7)<br>188,031  | (66.1)<br>266,192  |
| その他 | (1.9)<br>3,635     | (1.6)<br>3,680     | (1.5)<br>4,549     | (1.2)<br>4,899     |
| 総輸出 | (100.0)<br>193,366 | (100.0)<br>233,383 | (100.0)<br>299,853 | (100.0)<br>402,838 |

( ) 内は構成比  
(出所) 中央銀行  
(以下同じ)

### (2)商品別輸出動向

(百万円、%)

|        | 1987    | 1988<br>(見込) | 1989<br>(目標) | 前年比  |
|--------|---------|--------------|--------------|------|
| カメト等   | 36,663  | 46,995       | 56,133       | 19.4 |
| 宝石     | 19,830  | 25,000       | 30,000       | 20.0 |
| ゴム     | 20,539  | 23,500       | 23,800       | 1.2  |
| 米      | 22,230  | 30,200       | 30,000       | △0.7 |
| タバコカ   | 20,719  | 18,900       | 19,000       | 0.5  |
| IC     | 15,179  | 19,500       | 23,500       | 20.5 |
| 水産缶詰   | 13,221  | 17,136       | 20,500       | 19.6 |
| 織物、糸   | 12,199  | 13,280       | 13,660       | 2.9  |
| ウツ等    | 5,918   | 12,000       | 20,000       | 66.7 |
| 砂糖     | 8,563   | 9,417        | 11,500       | 22.7 |
| メイズ    | 3,868   | 4,860        | 8,100        | 66.7 |
| 冷凍えび   | 5,750   | 8,550        | 12,300       | 43.9 |
| チキン    | 4,028   | 4,600        | 5,200        | 13.0 |
| プラスチック | 2,217   | 3,400        | 4,100        | 20.6 |
| パン缶詰   | 3,728   | 3,920        | 4,150        | 5.9  |
| 乗用車、部品 | 611     | 2,797        | 3,920        | 40.2 |
| 総計     | 299,853 | 402,871      | 509,000      | 26.4 |

(出所) 商務省貿易統計資料

(注) 1989年は輸出目標額