

ASIAN INSTITUTE OF TECHNOLOGY



ANNUAL REPORT 1986

ANNT



CONTENTS

6

Academic Environment

New venture: A Graduate School of Business is proposed.

Other major developments: the integration of short course programs with divisional activities, and planned expansion of the Institute's computing capability.

14

Research Environment

By the end of 1986, a total of 28 contract and grant research projects were completed by the nine academic divisions and three academic centers.

Work on 78 other projects will carry on through 1987. Of these, 19 are being undertaken by the ET Division, 14 by AFE and 10 by HSD.

22

Continuing Education

Short courses, workshops and other training activities, which reflect the development priorities of the Asian region, are undertaken by the Institute's continuing education programs. These are conducted by the CEC, RCC, ADPC, ARRSTC and LRDC.

24

Information Dissemination

Networking, such as the AIT-Thailand Inter-University Network (ATUNET), plays a particularly important role as developing countries undergo the transition to the world of high technology communications.



THROUGH THE EYES OF ALUMNI

The alumni body represents the Institute's greatest resource in contributing to the growth and development of Asia.

How have AIT alumni responded to the challenges of regional development? In their answers, alumni reveal their clear perception of the fact that regional development is a worthwhile agenda for everyone.

This year's Annual Report highlights career profiles of some of our alumni. Space constraints limit us to 15 men and women, though we could fill the length of this report many times over with other alumni whose professional achievements emulate the mission of AIT. This special feature starts on page 32.

4

President's Message

"A rather different feature of this year was a clearly perceptible increase in the efforts of individuals in the Institute to promote its 'outreach' or extension activities."

26

Donor Relations

103 donors contributed a total of Baht 351,304,000, with the largest donations presented by the Governments of the Federal Republic of Germany, Thailand, Norway, Japan and Canada.

Since its foundation in 1959, the Institute has received donations totalling Baht 3,461,778,000.

40

Finance

The Institute's total assets amounted to Baht 1,210,690,000 during FY 1985-86.

Of the total operating budget of Baht 213,427,000, Baht 156,668,000 was in cash and Baht 56,759,000 in kind.

Increase in assets amounted to Baht 106,210,000.

The Institute's 1986 Annual Report has been prepared by the Office of Information Services. Editor: Teresita M. Padilla. Editorial Assistant: Jirawan Boonsiroj. Artist: Apichart Ngarmniyom.

Cover design: MDR Graphics Studio, Manila. Photos: On-campus photographs by Mr. Paitoon Tinapong. Single pictures of research activities supplied by the academic divisions and centers.

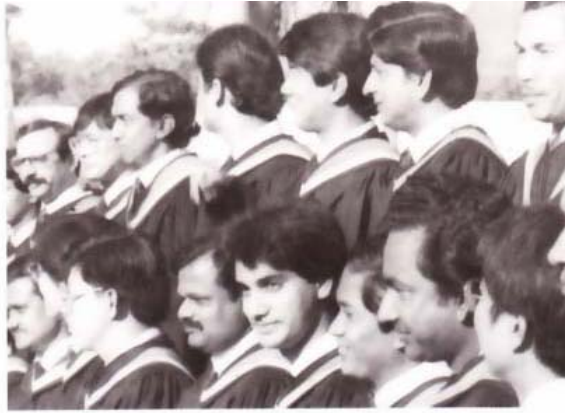
Printed by P. K. Printing, Bangkok.



PASSAGE: The Way It Is

Every other year, up to 20 alumni travel to the Institute to meet as incumbent members of the Governing Board of AITAA (the Asian Institute of Technology Alumni Association). In January 1987, one such meeting took place on campus to discuss AITAA activities in 1986, as well as to plan for the year ahead.

Manifest in this year's visit and in those of previous years is a recurring likeness among AIT alumni. Despite the span of years separating many of them, AIT alumni are linked by a strongly expressed appreciation of the education they received and an explicit sense of commitment to put themselves and their respective expertise at the service of the larger community. On another note --and quite as worthwhile in all respects-- they are drawn together by a sense of nostalgia for their shared experiences as students and later as graduates.



and Was

Having left AIT trained as potential educators, administrators, entrepreneurs and managers, the Institute's alumni today follow an impressive range of pursuits. Those in senior management hold such positions as chairman, president, director, project manager, chief of division, professor, and consultant, to name their more prevalent appointments. Those in middle management are holding jobs as deputy directors, heads of section, associate/assistant professors, and similar posts. To recent graduates, many of whom are currently employed as engineers, architects, plan analysts, town planners and research associates, prospects of career advancement are promising.

Since the graduation of the Institute's first batch of 18 students enrolled in hydraulic engineering in 1961, 3,758 more graduates have been awarded degrees in various fields of engineering. In 1986 the Institute enrolled students from 24 countries in Asia and other parts of the world, thus swelling the growing ranks of the alumni body in the future.

Delegates to the 16th AITAA Governing Board Meeting go for a stroll around the campus (opposite page). Above are scenes from the Institute's 48th graduation ceremony in December 1986.

PRESIDENT'S MESSAGE

1986 was an interesting year in a number of ways. Academic endeavors advanced steadily, the financial position of the Institute remained stable and recognition of the Institute continued to grow.

Putting academic matters first, I can report that in the degree programs of the Institute, enrollment of Master's scholarship holders rose to 340, due in no small measure to praiseworthy endeavors of faculty, staff and alumni to increase awareness of AIT in the region, and to concerted efforts by the Vice President for Development, Prof. Ricardo Pama, and certain divisions to attract scholarships in addition to those provided by national governments to the Institute. Our efforts to increase the number of doctoral students made further progress. The year also saw the continuing success of our short course programs for the professional upgrading of people in employment. For this the Continuing Education Center, the Regional Computer Center, the Asian Regional Remote Sensing Training Center and the Library and Regional Documentation Center must be congratulated, and inputs of the newly created Asian Disaster Preparedness Center warmly welcomed.

As with graduation ceremonies in previous years, the three held in 1986 were happy events, with ever rising numbers of young people leaving AIT to apply their newfound knowledge and skills to the service of their countries. The January and August ceremonies included the conferment of honorary degrees on Dr. Chai Muktabhant of Thailand, for his services to the Institute in its formative years and for his contribution to engineering education in Thailand, and to Mr. Shintaro Abe of Japan, for his efforts in increasing the development assistance program of Japan to the Asian region, particularly with respect to human resources

development. We proudly welcome these illustrious persons to our list of honorary degree holders.

The growing partnership between AIT and UNDP was underlined when Mr. Y. Y. Kim, the Regional Representative of UNDP for Asia and the Pacific, delivered the graduation address at the December ceremony, underlining the development purpose of education and of AIT's mission within it.

When I took up office in 1983, one of the requirements laid upon me by our Trustees was to lead the creation of a rolling three-year Institute Plan. This was developed in its first form during 1983-84 and stimulated a great deal of positive thought and debate in the Institute.

I think it is fair to say that over the last two years the Institute had slowly begun to forget about the Plan. Consequently when, in the late summer of 1986, it was decided that resource allocations within the Institute (such as scholarships, faculty members, etc.) should be geared more to the Plan's objectives than to maintaining the status quo, a renewed fever



With Mr. Ali Abbas of Pakistan, a December 1986 graduate from the Division of Water Resources Engineering.

of debate broke out. It has been decided to revise the plan, utilizing more professional planning concepts (objectives, goals, implementation schedules, alternative strategies, etc.).

Promotional travel during the year took me to Japan, the Philippines, Germany, India, the United States and Singapore. The tour of the United States, which I made with Prof. Pama, was a professionally organized promotional package. Besides US Government and UN agencies, we visited a number of private sector companies and foundations, as well as making media presentations. Wherever I travelled I found interest in, and appreciation of, the service being rendered by the Institute through its day-to-day activities and through the performance of its graduates.

Details of the financial position of the Institute are given in this report. The present financial situation is one that is difficult to comment on — the borderline between complacency and panic is narrow. In 1986, total cash and kind income dropped, reflecting the periodicity in large equipment and building grant awards. However, scholarship numbers and enrollment remained stable. Faculty secondments have never been higher.

As I noted last year, our total global income continues to be influenced by the marked trend of funding agencies away from general Institute support to project-specific or subject-specific, restricted financing. One very important consequence of this pressure on the unrestricted operating cash is that the Institute cannot afford any simple "takeover" of large sponsored projects. Such projects are usually commenced as additions to on-going activities, but on contract completion must be absorbed into those activities. Central funding at the "additional" level cannot simply be requested.

A rather different feature of this year was a clearly perceptible increase in the efforts of individuals in the Institute to promote its "outreach" or extension activities. A key link in such communication is formed by the alumni, and particularly the country chapters. In the Institute we appreciate greatly the efforts of our graduates, which this year culminated in the first ever presentation of an alumni scholarship—US\$18,000 collected by hard work and initiative. The sum may look small alongside large government donations, but since every cent came directly from



With Prof. R. Pama, AIT Vice President for Development.

the alumni's pockets, its significance far outweighs its magnitude.

A message prefacing an annual report should not, of course, be simply a summary of reported material. So I should like to end by restating the pleasure and pride I have in leading an Institute so uniquely structured and targeted, and by exhorting our team of faculty, staff and alumni to continue (and even increase) the wonderful efforts they are making for the Institute and its mission.



Prof. Alastair M. North
President

ACADEMIC ENVIRONMENT

DEVELOPMENTS

PROPOSED ESTABLISHMENT OF A GRADUATE SCHOOL OF BUSINESS

AIT's educational system evolves new capabilities to meet emerging technological and human resource development needs of the region. The proposed establishment of a Graduate School of Business by 1989 naturally complements the Institute's existing programs in technical education.

Major considerations make a persuasive case for the proposed graduate school. To sustain Asia's dynamic growth, an essential need is to train qualified Asians for the very top managerial positions in the private and public sectors. As its track record in engineering education shows, AIT is well placed to provide high quality curricula and the academic/research environment training specifically addressed to Asian needs.

Opportunities for doing research relevant to Asian business, which are lacking and difficult to incorporate in management programs offered abroad, are found at AIT. The realistic adaptation of Western-oriented experience and fundamental management techniques to suit the variety of problems encountered in Asia is fostered by AIT's fertile international community of faculty and students. This further distinguishes the proposed graduate program from those of western schools.

It is intended that the proposed Graduate School of Business will offer MBA and DBA degrees.

The concept now awaits sponsor reaction, particularly with regard to a new building and student/faculty support. During 1987 the Institute will be moving ahead with two trial Executive Training Programs. The first will be conducted from August 2 to 14 in collaboration with the University of California, Berkeley, while the second is expected to be conducted in late 1987 or early 1988, with the prestigious French business school, ESSEC.

ASIAN DEVELOPMENT PARK

Planning for the five major activities in the proposed Asian Development Park at AIT has proceeded steadily. The proposal, initially presented by AIT President, Prof. Alastair North, in 1984, is essentially geared towards closer interaction between industry and the Institute. The proposed park is intended to meet regional needs in industrial process development, the need of educational institutions to train students in changing industrial processes, and the need of private industries for an academic environment in which to carry out small scale research and development work.

The proposed park incorporates activities in five major fields: software engineering, CAD/CAM manufacturing technology, product in-service engineering, disaster preparedness, and selected biotechnology.

The Asian Disaster Preparedness Center came into being in 1986 with the support of the United States Office for Foreign Disaster Assistance, the Office of the United Nations Disaster Relief Coordinator, and UNDP. Direct, as well as indirect, support was also extended by CARITAS, the Mennonite Central Committee, OXFAM, UNDP country programs, USAID and UNICEF. 1986 saw the first two short courses presented by the center.

The introduction of CAD/CAM into the Institute's Regional Computer Center (RCC) proceeded steadily. Further development of a CAD/CAM function, including a client-targetted service, is seen in the RCC, the Division of Industrial Engineering and Management (IEM) and the Division of Structural Engineering and Construction (SEC).

The financing of feasibility studies on software engineering and in-service and standards engineering is being explored. Based on a decision reached by the Institute's Policy and Planning Committee, a long-term goal --rather than immediate implementation -- has been deemed as a more appropriate orientation for selected biotechnology. It does appear that the way ahead in 1987 is the strengthening of bioprocess involvement in the Division of Agricultural and Food Engineering.

Overall, long term planning endorsed by the Policy and Planning Committee provides for the consolidation and expansion of management as a goal for 1990. The balancing of civil and agricultural engineering, and management planning by high technology as a third sector is a goal to usher the next century.

INTEGRATION OF SHORT COURSE PROGRAMS WITH DIVISIONAL ACTIVITIES

The Institute is progressively moving towards the integration of short courses with divisional activities.

Certain course components in the program conducted by ARRSTC until 1986 will be offered to degree students in the academic divisions in an Interdisciplinary Natural Resources Development and Management Program. Five ARRSTC courses have been reorganized into credit-bearing courses. These are Introduction to Remote Sensing, Image Interpretation and Mapping, Digital Analysis of Remotely-Sensed Data, Remote Sensing Project Planning and Management, and Remote Sensing Workshop.

From April 30, 1987, ARRSTC will cease to exist as an administratively separate unit, but will provide the core remote sensing laboratory for the Institute-wide integrated program, brought under the Institute's normal academic policy and resource allocating procedures.

Also becoming increasingly integrated with divisional degree work is the RCC's Program in Computer Applications Development (PCAD), which is conducting its CAD/CAM module in close collaboration with the IEM and SEC Divisions.

These moves are part of a general academic policy to consolidate activities into more cooperative functions, reducing the diversity of activities in the nine academic divisions and seven centers.

DEVELOPMENT OF THE INSTITUTE'S COMPUTING CAPABILITY

A group headed by the Vice President for Academic Affairs, Prof. Gajendra Singh, has been appointed to submit a plan for the development of the Institute's computing capability, in the light of its existing capability and of current and future demands.

The following guidelines in the formulation of the Institute's policy in this matter have been reached during several sessions conducted by the group.

- to consider the Institute's regular academic programs as the highest priority, followed by academic support services, administrative services, and out-reach activities;
- to utilize the Institute's limited resources for acquiring computing facilities according to the above priorities.

NEW NAMES

Division of Computer Science

In the past confusion has been caused by the division name "Computer Applications." Across the world university departments specializing in software and information systems carry the phrase "computer science" in their titles.

To reflect the strengthening of its activities in software and information systems, the Division of Computer Applications was officially renamed the Division of Computer Science, with effect from May 1986.

Within the Institute, the phrase "computer applications" has been retained for such activities as CAD and digital image creation.

Language Center

Based on a recommendation made by the Policy and Planning Committee at its meeting in September 1986, AIT President North authorized the official renaming of the English Language Center as the Language Center, with effect from January 1987. The new name more accurately reflects the fact that, in addition to its comprehensive program of English courses and self-access facilities, the center offers instruction in Thai, French and Japanese and has audio/print materials in many other languages. Potential donors may be interested to know that self-instructional materials for particular languages would be most welcome and can be effectively and quickly incorporated into the center's self-access system.



Microcomputer laboratory at the RCC.

ENROLLMENTS

Student enrollment, which was evenly distributed throughout the three terms in 1986, increased from an annual average of 593 in 1985 to 638 in 1986. About 10 per cent of total enrollment figures in 1985 and 1986 were accounted for by the RCC, ARRSTC, and the ELC's Pre-Master's Degree Program.

While remaining small, enrollment in the Doctoral Program increased from an annual average of 27 in 1985 to 31 in 1986.

Enrollment Distribution 1986

	Divisions	Centers	Total
Jan	566	73	639
May	564	49	613
Sept	596	67	663
Average Enrollment	575	63	638

Average Annual Enrollment in Regular Academic Programs 1980 – 86

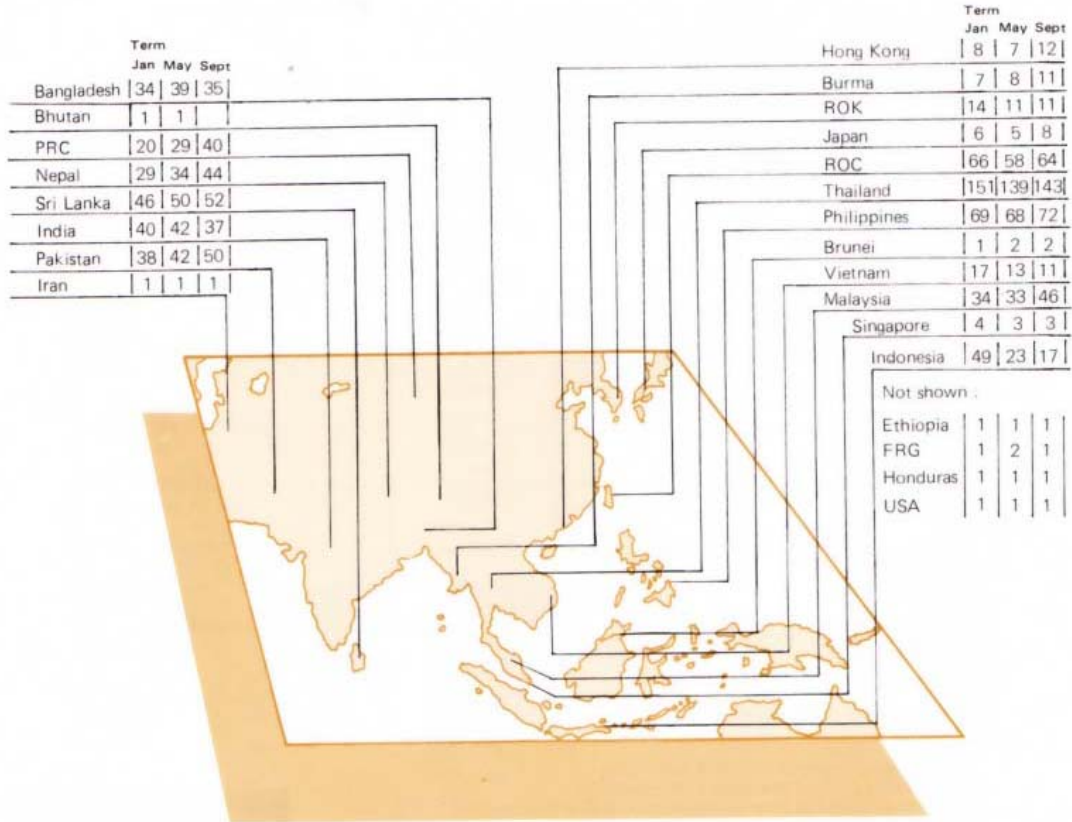
Year	Master's Program	Doctoral Program	Doctoral Enrollment (%)
1980	486	18	4
1981	504	17	3
1982	507	15	3
1983	548	20	4
1984	552	26	5
1985	522	27	5
1986	561	31	6

Comparative Enrollment Statistics 1985, 1986

Year	Term	Division Degree Programs										Centers			Total
		AFE	CS	ET	EE	GTE	HSD	IEM	SEC	WRE	Others*	RCC	ARRSTC	ELC	
1985	JAN	78	68	63	74	79	38	32	70	32	17	30	23	4	608
	MAY	75	62	59	38	37	73	60	36	54	10	30	23	10	567
	SEPT	42	40	33	66	85	82	56	76	58	12	21	16	17	604
AVERAGE		65	57	52	59	67	64	49	61	48	13	27	21	10	593
1986	JAN	91	69	67	64	84	38	27	73	30	23	29	25	19	639
	MAY	90	65	68	39	51	68	66	43	67	7	16	20	13	613
	SEPT	56	36	50	78	91	76	56	73	67	13	27	22	18	663
AVERAGE		79	57	62	60	75	61	50	63	55	14	24	22	17	638

* Includes students enrolled in the Diploma of AIT, Certificate and Special programs.

**Number of Students Enrolled by Country
1986**



The majority of students enrolled at AIT come from Thailand, the Republic of China, Bangladesh, the Philippines, India, Pakistan, Nepal and Sri Lanka.

GRADUATIONS

Graduates Record

Total Graduates By Degree Awarded	M.Eng.	M.Sc.	D.Eng.	Total
	196	78	9	283

	Degrees			Total
	M.Eng.	M.Sc.	D.Eng.	
AFE	17	19	2	38
CS	19	14		33
ET	25	2		27
EE	21	6		27
GTE	31	3	2	36
HSD	6	31		37
IEM	18	3	2	23
SEC	34			34
WRE	25		3	28

Total Graduates by Country

	Degrees			Total
	M.Eng.	M.Sc.	D.Eng.	
Bangladesh	19	3		22
Burma	1	2		3
PRC	1	4		5
Hong Kong	1	2		3
RoC	23	6	1	30
India	18	2	1	21
Indonesia	10	4	1	15
Iran		1		1
Japan	3			3
RoK	6	1	1	8
Malaysia	10	2		12
Nepal	6	3	2	11
Pakistan	19	1		20
Philippines	21	6	1	28
Singapore	1			1
Sri Lanka	20	7		27
Thailand	31	31	2	64

HONORARY DEGREES

An Honorary Degree of Doctor of Technology was awarded to Dr. Chai Muktabhant, in recognition of his contribution to engineering education in Thailand. Dr. Chai is Secretary General of The Royal Institute and former Dean of the Faculty of Engineering at Chulalongkorn University in Bangkok. His award was made at the Institute's 46th graduation ceremony in April.



AIT AWARDS

The Institute's awards for excellence namely, the Hisamatsu Prize, the Institute Prize, the Norsk Data Prize and the Tim Kendall Memorial Prize, are determined by quantitative methods, which take into account a student's GPA and thesis grade. In the event that two or more students obtain the same quantitative assessments, all other aspects of a student's academic performance in the division concerned are taken into consideration.

Following is a summary of the 1986 graduation awards.



Doi



Wable



Hayat

	April	August	December
HISAMATSU PRIZE	Doi Ryoji (SEC) Japan	Kittichai Banjong (AFE) Thailand	Kung Shiann-Far (HSD) RoC
INSTITUTE PRIZE	M.V. Wable (EE) India		K.E. Seetharam (IEM) India
NORSK DATA PRIZE		P.S. Gajjar (CS) India	
TIM KENDALL MEMORIAL PRIZE	T.M. Hayat (GTE) Pakistan	Angshu Sett (ET) India	Somchai Rojana- Kamthorn (WRE) Thailand



Kittichai



Gajjar



Sett



Shiann-Far



Seetharam



Somchai



Mr. Shintaro Abe, Chairman of the Executive Council of the ruling Liberal Democratic Party of Japan and former Minister of Foreign Affairs, was awarded an Honorary Degree of Doctor of Technology during the Institute's 47th graduation ceremony in August.

In his citation address, Dr. Thanat Khoman, Chairman of the AIT Board of Trustees, took particular note of Mr. Abe's significant and continuing contribution to the peace and stability of Asian countries, to regional economic cooperation, and to worldwide promotion of mutual understanding among different countries.

FACULTY AND INTERNATIONAL ACADEMIC AND RESEARCH STAFF

Administrative Appointments

Appointments to the position of Division Chairman were as follows: Dr. Mario Tabucanon, Chairman of the Division of Industrial Engineering and Management as from August, succeeding Dr. Okitsugu Fujiwara; Dr. Huynh Ngoc Phien, Chairman of the Division of Computer Science as from September, replacing Dr. Vilas Wuwongse who served as Acting Chairman for a seven-month period; and Mr. Ray Archer, Chairman of the Division of Human Settlements Development as from December, succeeding Prof. Hiranya Dias who held the position for an eight-month period following the completion of Prof. Karl Weber's term of office as chairman.

Lt. Col. Brian Ward (Ret.) was appointed Director of the Asian Disaster Preparedness Center starting in March.



Tabucanon



Phien



Archer



Ward

APPOINTMENT OF NEW VPAA



Prof. Gajendra Singh was appointed Vice President for Academic Affairs on September 9, succeeding Prof. Fumio Nishino. Prof. Singh joined AIT in 1975 initially as an Assistant Professor. He received his promotion to Associate Professor in 1978 and to Full Professor in 1984. Prof. Singh graduated in 1966 from Pantnagar University in India. He received his Master's degree from Rutgers University in 1968 and Ph.D. in 1973 from the University of California at Davis.

1986 Faculty and International Academic and Research Staff

Country of Origin	January Term			May Term			September Term		
	Faculty	Staff	Total	Faculty	Staff	Total	Faculty	Staff	Total
Australia	4		4	4		4	4		4
Bangladesh	2	2	4	2	2	4		2	2
Belgium	3	3	6	3	3	6	4	3	7
Burma		1	1		1	1		1	1
Canada	2		2	2		2	1		1
RoC	3		3	3		3	2		2
Denmark	3		3	3		3	3		3
France	4	4	8	4	5	9	6	4	10
FRG	7	2	9	7	2	9	6	4	10
India	10	6	16	14	6	20	13	7	20
Italy	1		1	1		1	1		1
Japan	7		7	9	1	10	8	1	9
RoK	1		1	1		1	1		1
Malaysia	1	2	3	1	2	3	1	2	3
Nepal	1	1	2	1		1	1		1
Netherlands	3		3	1	1	2	1	1	2
New Zealand	1		1	1		1	1		1
Norway	2		2	2		2	2	1	3
Pakistan	1		1	1		1	1		1
Philippines	2	4	6	2	5	7	2	5	7
Poland	1		1	1		1			
Portugal	1		1	1		1			
Sri Lanka	5	2	7	6	2	8	6	2	8
Switzerland	2		2	2		2	2		2
Thailand	15	11	26	15	15	30	16	14	30
UK	12	4	16	12	4	16	11	5	16
USA	7	1	8	7	1	8	2	1	3
Vietnam	2		2	2	1	3	3	1	4
TOTAL	103	43	146	108	51	159	97	56	153

PROMOTIONS

Full Professor

P. Edwards 1 July

Associate Professor

S. Chandra 1 July
 B. Kenny 1 July
 T. Onishi 1 July
 S. Vigneswaran 1 July



Edwards



Chandra



Kenny



Onishi



Vigneswaran

APPOINTMENTS

Associate Professor

A. Hasegawa 23 Aug
 M. Mizutani 20 Aug
 J.C. Mora 27 Nov
 S.A. Nielsen 1 Sept

Assistant Professor

M.C. Laszewski 6 Oct
 Athapol Noomhorm 1 Sept



Hasegawa



Mizutani



Mora



Nielsen



Laszewski

Long Term Visiting Faculty Member

F.A. Aagesen 15 May
 B. Chateau 13 Oct
 R.L. Chauhan 1 May
 S. Govindasamy 11 June
 B.H. Khang 16 Dec
 R.P. Mohanty 1 May
 L. Niem 1 July
 H.S. Shin 1 Jan
 P.A. Venkatachalam 16 Dec



Athapol



Aagesen



Chateau



Chauhan



Govindasamy



Khang



Mohanty



Niem



Shin



Venkatachalam

Short Term Visiting Faculty Member

E. Arai 12 May
 D.S. Bhargava 12 May
 N.G. Bhole 12 May
 K.K. Biswas 17 May
 R.R.B. Braek 8 Sept
 G. Chauhan 7 Jan
 E.M. Claessens 8 Sept
 Y. Fujino 10 May
 S.K. Gupta 12 May
 R. Henriksen 1 May
 B.R. Marwah 6 Sept
 N. Naganna 8 Sept
 B.T. Nijaguna 8 Sept
 V.R. Raghavan 9 Jan
 B.K. Sengupta 8 Jan
 K.S. Thio 6 Jan
 Hoang Tuy 1 Sept
 R. Vermerghet 1 Oct
 D.A.M.J. Wilms 8 Sept

RESIGNATIONS

J.H. Jones 18 Jan
 F. Nishino 31 Aug
 B.H. Atwell 31 Aug
 M. Dyhr-Nielsen 16 Sept
 N. Islam 1 Sept
 B.N. Lohani 1 Sept
 J.E. Lukens 31 Aug
 Md. A. Rahman 15 Aug
 G. Stahl 22 Jan
 R.J. Whiteley 31 July
 B.K. Worcester 31 Aug
 M.C. Brown 16 Sept
 S.E. Goldin 31 Aug
 T. Onishi 31 Mar
 K.T. Rudhal 31 Aug
 F. Sauter-Servaes 31 Aug
 Prapaporn Tungarote 1 Jan

RESEARCH ENVIRONMENT

Agricultural and Food Engineering

Development of intensive tilapia pond culture as a means of increasing freshwater fish production in the tropics

This project, which is conducted jointly by the Institute of Aquaculture in Stirling, Scotland and AIT, hopes to provide basic information on the productivity of tilapia in ponds in the tropics. The development of a rational fish production system is based on improved technologies evolved at the two institutions: controlled hatchery conditions to produce monosex fingerlings from Stirling, and pond management techniques developed by AIT. To date improved yields of Nile tilapia have been obtained by stocking ponds with fish treated with a male hormone which converts potentially female fish to males. The all-male population grows faster than normal populations with both males and females. Unwanted reproduction which reduces growth is eliminated.

Principal Investigator: Prof. Peter Edwards.
(Supported by EC).

Campus west end development project

In June 1986, the AFE Division started to develop land, comprising an area of around 25 to 30 ha., on the west end of the AIT campus.

This case study seeks to demonstrate efficient utilization of Bangkok plain soil. The area under study is also being used as an experimental field for faculty and students of AFE and other divisions. At the same time beautification of this potentially nice part of the campus is being considered. An irrigated and integrated farm with a variety of crops and livestock has been created on part of the site.

Principal Investigator: Prof. J. Moller Nielsen.
(Supported by AIT, First Stage).



AIT campus hatchery for the production of fish "seed".

Wheeled tractor project

This is a joint project with the Agricultural and Food Research Council of the Institute of Engineering Research in the UK. The aim is to measure the performance of tractors in wet paddy fields and find ways to improve it. The behavior of lugs on cage wheels in wet clay soil has been investigated. The photograph shows the distortion in soil caused by a single lug on such a wheel. This work has demonstrated that existing theories to describe this phenomenon are fundamentally wrong and new theories will have to be evolved, taking into account the extremely plastic nature of the soil.

Principal Investigator: Dr. D. Gee-Clough.
(Supported by EC).



Distortion in soil caused by a single lug.



Development of an area comprising some 30 hectares of bushland and acid sulphate soils into a highly fertile farmland.



Computer Science

Development of a computerized primary health management information system

Primary health care, adopted as a nation wide development program by the Thai Ministry of Public Health since 1977, provides for the mobilization of local resources to develop community self-reliance and increase community participation in providing health services. Health volunteers are the principal operators of the program. However, up till now there is no information system on which administrators can base the effective monitoring and evaluation of the program.

This research project involves a thorough analysis of the organization of the country's primary health care program to determine appropriate levels of computerization. It aims at formulating technical specifications and implementation plans for a primary health care management information system, as well as providing realistic cost estimates to the Ministry of Public Health.

Principal Investigators: Ms. Kanchana Kanchanasut, Mr. R.L. Gonzales, Jr.
(Supported by the Ministry of Public Health, Royal Thai Government).

Energy Technology

Direct heat gasifier for drying maize: development, pilot testing and monitoring

The sponsor of this project has recently built and commissioned a few gasifier burner systems for corn drying. The technical specifications of the gasifier systems were unknown prior to this work. Reported in this study are the results of monitoring three different field gasifier plants, as well as the outcome of design and development work on direct heat gasifiers at AIT's Energy Research Park. The environmental aspects of biomass gasifier use and the grain/food contamination aspects are discussed. The line of equipment used for quantifying technical parameters and estimating energy balance is described. Rice husk and corn cob are two of the most promising fuels and hence their zone-wise availability in different provinces of Thailand is recommended. They are particularly useful in tobacco curing, lime production, and noodle making, where substitution potential is great.

Major conclusions of this study are as follows:

- Grate is an important element of a gasifier which needs careful designing for sustained operation. Owing to the difficulty in building a universal gasifier, one reactor with different grates to match different residue fuels could be developed;
- Water cooled walls of the present field gasifier would have to be changed to refractory lining to ensure prolonged use, as well as improve the energy balance of the system;

A Thai computer-aided instruction for teaching arithmetic in Prathomsuksa 6

The purpose of this project is to develop an authoring system which can generate coursework for teaching arithmetic in Prathomsuksa 6 (Grade 6). The authoring system accepts explanations, concepts and guidelines from the teacher and produces a set of teaching materials in Thai for use by Thai pupils. The system is also capable of collecting statistics of various pupils for the teacher's analysis later. The system is implemented on Philips Microcomputer System 25 which incorporates a Thai character set.

Principal Investigator: Dr. Kanchit Malaivongs.
(Supported by the Ministry of Education, Royal Thai Government).



Direct heat gasifier.

- Char losses for field units are higher compared with the AIT pilot plant gasifier. A bigger induced draft fan, which would improve the hearth-load (m^3 of gas/cm²-hr) and in turn the gasification efficiency, would have to be studied;
- Serious environmental effects of the large-scale expansion of residue-based gasifiers could be prevented if proper safety regulations are observed and gasifier effluents are properly disposed off.

Principal Investigators: Dr. S.C. Bhattacharya, Mr. N. Shah,
(Supported by Smith International Co.).

Assistance in strengthening overall energy planning and policy analysis capability and master plan

This project comprises two major components: preparation of a detailed set of energy projects to be implemented in Asia through the Regional Energy Development Program of ESCAP, and analysis of the energy policies of Asian countries during 1970–83.

The first component, which was completed in August 1986, involved background research work to support the formulation of regional energy projects and consultations with representatives of Asian governments, UN agencies and governments of developed countries. To facilitate the consultations, two workshops attended by representatives from 20 countries were hosted by the ET Division. In addition, three meetings of energy experts from eight Asian countries were held to finalize regional projects, tentatively budgeted at US\$5 million and scheduled to be implemented during 1987–91.

The second component is an empirical study of the energy policies of 10 Asian countries to facilitate the exchange of policy experiences so that more efficient policy alternatives can be identified. Partial preliminary results were presented at the First Asian Forum on Energy Policy jointly organized by AIT and ESCAP in October 1986. The output of this study, which will include comparative policy analyses, country profiles and statistical data, will be published as a book.

Principal Investigators: Dr. N.J.D. Lucas, Dr. R. Codoni, Dr. G.V. Dang, Dr. R.M. Shrestha, Dr. E.C.Y. Chang, Mr. J. Ambali, Miss M.S. Forbes.
(Supported by UNDP, ESCAP and EC).

Research and development of solar-powered desiccant refrigeration for cold-storage applications

During the first year of this two-year project, investigators at AIT studied ammonia-water refrigeration in combination with a solid desiccant system, while collaborators at the Illinois Institute of Technology (IIT) in Chicago studied a hybrid system consisting of a vapor compression cycle in combination with a solid desiccant cooling cycle. In each case it was found that the efficiency of the combination was too low for practical exploitation. It was therefore decided to investigate closed cycle desiccant cooling systems.

A solar zeolite-water refrigerator built in the USA is now being tested at AIT, while IIT collaborators are conducting basic tests on the zeolite-water pair and modelling the system.

In the course of their study, AIT investigators became aware of the activated charcoal-methanol pair which has a better coefficient of performance compared with the zeolite-water pair. As activated charcoal is cheaper, and both activated charcoal and methanol can be manufactured in the country of origin and use, it was decided to investigate this pair. Tests are underway to select the best of several charcoal samples gathered from the UK, India and Thailand for use in a prototype unit to be fabricated in due course at AIT.

Principal Investigators: Prof. R.H.B. Exell, Dr. S.C. Bhattacharya.
(Supported by USAID).



Environmental Engineering

Palm oil mill effluent management in Thailand: A preliminary study

This study includes a review of available information as well as field visits to three selected palm oil mills (production capacities: 10, 20 and over 30 tons FFB/h). While the treatment systems visited are efficient, the treated effluent does not meet the standards of the Ministry of Industry. Treatment alternatives, process control, and modifications have been suggested. A review of all treatment systems in palm oil mills has been proposed to provide baseline information in improving their treatment efficiencies, and in formulating guidelines for the establishment of effluent standards for the industry.

Principal Investigators: Mrs. Samorn Muttamara, Dr. Hang Sik Shin, Dr. S. Vigneswaran.
(Supported by UNDP/FAO).



Sampling of effluent storage ponds for analysis at United Palm Oil Mill in Krabi province, Thailand.

Establishment of design recommendations for health protection measures on the implementation of intermittent water supply schemes

This study explores the use of intermittent water supply schemes in place of continuous supply, especially in provincial areas with significant peak water demands. Particular attention is focussed on water quality, with respect to residual chlorine and coliform count.

Results of the analysis show that the quality of treated water is influenced by seasonal variation, raw water quality and operational control. Recommendations to improve the treatment processes have been formulated by the study team.

Recommendations have also been made concerning chlorination and the monitoring of intermittent water supply schemes.

Principal Investigators: Dr. S. Vigneswaran, Dr. Chongrak Poiprasert.
(Supported by WHO/Provincial Waterworks Authority, Thailand).



Conventional water supply system with a slow sand filter.

Geotechnical and Transportation Engineering

Modal change effect of new transport

Mass transit system is now well recognized as a vital component in transport planning. This study seeks to establish a method of estimating the mode share between road traffic and public transport when a new transport system is introduced.

Manila is the first city to introduce the light rail transit (LRT) for urban mass transport. The LRT is the focus of this investigation, with special attention given to its operations, volume of passengers and other relevant data required in the planning of new transport.

While the LRT's operations have been successful, the demand for it has exceeded normal limits within just one year of operation. This suggests that the LRT may not be a sufficiently sturdy infrastructure for urban mass transport.

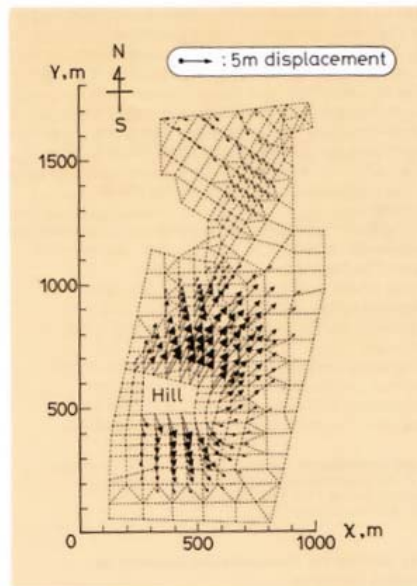
Principal Investigator: Dr. T. Murata.
(Supported by JICA).

Numerical prediction of differential ground surface motion during earthquake liquefaction

Concern over the failure of buried pipelines due to earthquake liquefaction has been increasing. Recent field investigations strongly suggest that permanent displacement of the ground generates substantial bending moments in the pipelines, thereby breaking them. Based on this observation, the investigator of this research has developed a numerical technique to predict permanent displacement of the ground.

As the cyclic behavior of pipelines is likewise important, work is now underway to calculate the differential motion of the ground surface which directly causes the cyclic bending moments in the pipelines. The numerical method being developed is essentially an elastic two-dimensional finite element analysis, and requires short computation time and minimal effort to prepare input data.

Principal Investigator: Dr. Ikuo Towhata.
(Supported by the Association for the Development of Earthquake Prediction in Japan).



Calculated permanent displacements of the ground.



Deterioration of Wat Prang Khaek in Lopburi province.

Foundation investigation and remedial measures for Prang Sam Yod and Prang Khaek in Lopburi, Thailand

Railway and highway traffic vibrations are affecting the Khmer style temples of Prang Sam Yod, Prang Khaek and Wat Phra Sri Ratana Mahathat in Lopburi province. Of the three sites, Wat Phra Sri Ratana Mahathat has been found to experience negligible vibration, compared with the high levels of vibration on the two other sites. The latter problem plus the leaning tower at Wat Manichulakan are the focus of this study, which is Phase II of the GTE Division's research project on the Khmer style temples.

Prang Sam Yod is experiencing vertical cracks and separation of big blocks of laterite which are in danger of falling off from the main frame.

Prang Khaek is also experiencing the separation of fine laterite bricks, tilting of the superstructure, and cracking due to differential movements in the foundation.

This study includes further measurements of the horizontal component of vibration, foundation investigations, including laboratory and field soil testing, and the formulation of remedial measures.

Principal Investigators: Dr. D. T. Bergado, Dr. I. Towhata, Prof. A. Balasubramaniam and Mr. A. Bukkanasuta. (Supported by the Fine Arts Department, Royal Thai Government).

Survey method for transportation planning in developing countries

Data required in transportation planning are vast and varied. In the developing countries, however, such data are not readily available. This study seeks to establish a new method to collect and/or estimate necessary data for actual transportation planning, taking into account the limited circumstances of developing countries. Using indirect measurement, and sampling techniques and physical data obtained from aerial photographs, this study is now developing a survey method to be used in actual transportation planning.

Principal Investigator: Dr. K. Miyamoto. (Supported by JICA).

Human Settlements Development

Belgian low-cost housing project

This project's research component, conducted by AIT, includes an evaluation of low- and medium-cost, privately developed housing estates in Bangkok. A representative sample of some 20 private housing estates that had received Government Housing Bank support has been studied to identify basic parameters of the housing units and their residents. The results are expected to lead to improvements in estate management and house design and in the Government's ruling on infrastructure and policy-making on the lower cost section of the housing market. Approximately 250,000 of these units will be needed during the period 1986–1990.

A profile of the population in these estates and estimates of their housing expenditure have revealed that more than half of the homeowners spend between 25 and 50 per cent of their monthly income on housing. Satisfaction with the housing units is low for about 25 per cent of the families. Problem areas are services, such as water supply, safety and security, public transportation and infrastructure, including recreational facilities. Families in houses costing between Baht 100,000 and 300,000 seem less satisfied with the provisions arguing against the use of substandard materials.

A survey of the residents' improvement priorities ranks security system the most important followed by water supply, ventilation, bathroom and toilet facilities, and the number of rooms per unit.

Policy guidelines are being drafted to support the development of private sector investment in this price range and to provide improved consumer protection to attract more buyers.

Principal Investigators: Dr. Walter E.J. Tips, Dr. Tongchai Savasdsara, Associate Prof. Sunanta Suwannodom (IPS, Chulalongkorn University). (Supported by the Belgian Government, Belgian Administration for Development Cooperation – Flemish Inter-University Cooperation Program).



Typical low-cost dwelling unit at Buakhoaw Estate in Minburi District, Bangkok.

Water Resources Engineering

Land consolidation for urban development in Indonesia

The land pooling/readjustment (LP/R) technique is a method of consolidating small farms for urban development that is widely used in Japan, South Korea and Taiwan, and in some cities in Australia and Canada. In a typical LP/R project a local government agency prepares a subdivision scheme for a selected urban-fringe area which, when approved, authorizes and guides the project. The agency subdivides the land into streets, public open space and serviced building plots, and then sells some of the plots to recover its costs and passes the other plots back to the landowners. These projects enable local governments to subdivide the most appropriate lands for planned urban uses, to obtain land needed for streets and public facilities at no cost, and to install the required network infrastructure at no cost. Landowners usually support these projects as they do not incur any cost when the land is subdivided and considerably increased in value. The LP/R technique could be transferred to most Asian countries to improve their urban development and land supply.

Indonesia is the first Southeast Asian country to adopt the technique. Influenced by the Taiwan experience, the Indonesian department of lands (Directorate-General Agraria) commenced its first LP/R project in Bali in 1981. By mid-1986 the department had completed this and two other projects and had another 17 projects in progress, three in Bali and 14 in 11 other provinces. The Bandung Municipal Government had also nearly completed a pilot LP/R project.

The aim of the research project was to review the experience and progress of the LP/R projects in Bali and Java, and to recommend on the future development and application of the LP/R technique in Indonesia. The study found that the projects completed and in progress were providing important benefits in converting farmland into building land as compared to the usual system of land conversion. These benefits could be increased in the case of projects for urban lands which are physically and economically "ripe" for urban development, by including the installation of the network infrastructure in the projects. Recommendations were also made for increasing and extending the use of the LP/R technique to better manage and finance urban development in Indonesia.

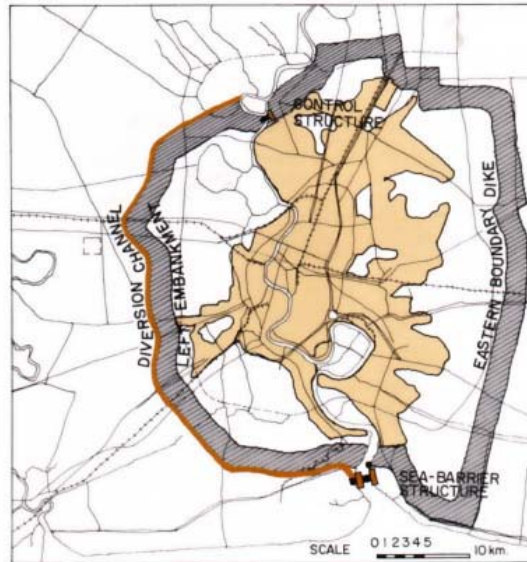
Principal Investigator: Mr. Ray W. Archer.
(Supported by Harvard Institute for International Development).

Integrated flood relief plan of the West Bank, Chao Phraya River

Flood protection of Bangkok and its vicinity has been a major component in a joint study by the WRE Division and the Thai-Austrian Consortium. The principal idea is to construct a diversion channel called "Chao Phraya 2" on the west side of Chao Phraya River which passes through Bangkok, and two main structures on the Chao Phraya River, namely a flow diversion structure to the north of the city and a sea-barrier structure at the estuary of the river. Such a scheme would provide for the diversion of flood water around the circumference of the city, regulation and limitation of flood water discharge through the city, reduction and partial elimination of the harmful effects of high tides from the sea. Efficient klong flushing on the West Bank of the Chao Phraya River is made possible by closing the flow diversion structure and the salinity gate, thus forcing the "Chao Phraya 2" water to flow through the klong towards the Chao Phraya River. This reduces water pollution considerably.

The project supports urban development on the West Bank, which would counterbalance excessive urban growth on the East Bank of the river. Construction of the diversion channel on "Chao Phraya 2" would create an area of up to 560 km² on the West Bank of the Chao Phraya River, which would be flood-protected and open to urban development.

Principal Investigators: Dr. Tawatchai Tingsanchai,
Prof. Suphat Vongvisessomjai.
(Supported by BMA).



PROPOSED ALTERNATIVE

(Alternative 4.2)

- Build-up Area
 - Agriculture
 - Embankment
 - Weir
 - Lock
 - Pumping station
- } Protected Area

Integrated flood relief plan of the West Bank, Chao Phraya River.

Physical model and mathematical model of heat diffusion from Khanom Thermal Power Plant

Under study is the extent of heat plume in the water body of the surrounding sea and parts of the Khanom River, as a result of the warm water discharge from the cooling plant of the existing 75 MW Khanom Thermal Power Plant and a projected 300 MW plant.

Field investigation is underway to obtain background data on the ocean environment, including tide, tidal current and temperature. A physical model having a horizontal scale of 1/100 and vertical scale of 1/50 has been constructed to obtain the isotherms of the diffused heat plume in the vicinity of the power plant. A mathematical model, which simulates both the dynamics of the flow and the heat diffusions, is used in estimating the far field heat spreading for a longer time period.



A view of the Khanom Thermal Power Plant.

Principal Investigators : Mr. Prida Thimakorn, Prof. Suphat Vongvisessomjai.
(Supported by Team Consulting Engineering Co., Ltd.).

Asian Regional Remote Sensing Training Center

Preliminary study on soil-geomorphological mapping by remote sensing techniques

Remote sensing data have been successfully applied to vegetation study, but little work has been carried out in soil and geomorphological mapping, particularly in the tropical region. The diversity of soil properties and vegetation cover, as well as climatic variation, mostly soil climates, make the task difficult.

The objective of this project is to investigate techniques to map soil and geomorphic units in some areas in Rayong province by utilizing Landsat data.

The specific tasks are to establish a geomorphic map from Landsat data, and to create two different soil maps, one based on the U.S. System and the other, on Landsat data.

Principal Investigator: Dr. Apisit Eiumnoh.
(Supported by Research Initiation Grant, AIT).

Comparative thematic mapping analysis of spot data: the Vientiane Plain (Laos)

This joint study by AIT and ESCAP/Mekong Secretariat is within the framework of the preliminary evaluation program for SPOT Satellite (or PEPS). It seeks to evaluate SPOT data capabilities in medium-scale environmental components inventory needed for the agricultural development of the Vientiane plain.

Much use is made of multi-spectral SPOT data acquired at four different times over a one-year period. Data have been carefully chosen with respect to cropping and flooding periods in the area and the derived thematic mapping of sub-areas chosen with respect to geopedomorphology, water surface runoff, cultural landscape and agricultural features.

Principal Investigator: Dr. D. Borel.
(Supported by Mekong Secretariat/CNES).

English Language Center

Computer-assisted language learning

The objective of this two-part study is to investigate the potential of computer-assisted language learning (CALL) at AIT.

Part I has been concerned with the design and development of an authoring system, allowing the English Language Center faculty to "write" materials suitable for students deficient in technical English. Software developed includes an instructional information retrieval tool, a delivery tool, and an answer processing and error correction facility. There are obvious limitations in the software, which is only really suitable for students requiring remedial English. The answer processing facility only accepts preprogrammed student responses. Similar limitations have been expressed about commercially available CALL software, most of which is considered pedagogically unsuitable. Partly, this is due to a lack of communication between course designers and



Land MSS imagery, band 7 (0.8 – 1.1 micrometer) of the Northeast, showing Ubolrat Dam, Phu Wiang and some structural geomorphic units.

Soil, land use and soil conservation in four selected people's irrigation systems in Northern Thailand

The Royal Irrigation Department plans to develop land and water for intensive agricultural crops in the northern valleys where people's irrigation systems are in use. These systems are constructed and managed by the local people. Prior to construction, studies must be made concerning all relevant physical, social, infrastructural and communication factors. Information concerning soils and land use is also required. Ancillary data were collected and ground verification were carried out throughout the basin. Aerial photographs will be interpreted for land use types.

The objective of this project is to provide information concerning soil characteristics, properties, classifications and capabilities. Information on land use types and erosion will also be made available.

Principal Investigators: Dr. Apisit Eiumnoh, Dr. Kaew Nualchawee.
(Supported by Team Consulting Engineers Co., Ltd.).

programmers. Also, sophisticated programming techniques, including artificial intelligence, are still being refined.

Because of these limitations, Part II has focussed on areas that exploit the responsive nature of the computer, i.e. its ability to supply information. A concordance program, which draws on a corpus of texts relevant to various engineering disciplines, is now being developed. The concordance provides the user with a printout of requested words in their context. These printouts are used as basis for classroom discussions about how language is used, and may also be potentially useful in having students infer solutions to problems in their writing. The editing capabilities of the word processor make it particularly useful in developing students' writing skills.

Principal Investigator: Mr. Graeme Storer.
(Supported by AIT Research Initiation Grant).

CONTINUING EDUCATION

ASIAN DISASTER PREPAREDNESS CENTER

The Asian Disaster Preparedness Center (ADPC) assists countries in the region in the formulation of policies and the development of capabilities in all aspects of disaster management. ADPC's role is in keeping with the Institute's mandate to study problems common to the region and seek solutions to them.

ADPC provides services in the following fields: training, information, planning, technical programs, awareness programs, surveys and studies, and consultancies. During 1986 priority was given to training, information, and the establishment of links between the center and various countries in the region.

● Training

Two disaster management courses were organized during the year, each of six weeks duration. The participants were senior officials from governmental and non-governmental organizations with direct responsibility for certain aspects of disaster management. They came from Bangladesh, China, Hong Kong, India, Indonesia, Papua New Guinea, the Philippines, Sri Lanka, Thailand and Vietnam. In addition to AIT faculty and staff, resource persons at the two courses included

authorities from the Cranfield Disaster Preparedness Center, the International Committee of the Red Cross, WHO, INTERTECT, UNDP, the United Nations High Commissioner for Refugees (UNHCR), the Rockefeller Foundation Program, and the University of Delaware.

● Information

ADPC's library and data base are expanding fast. The policy is to concentrate on acquiring material in the fields of human response and disaster management, to network with technical data bases which exist elsewhere, to disseminate information actively to countries in the region, and to provide an information referral system. ADPC makes extensive use of the facilities offered by the Institute's Library and Regional Documentation Center.

A particularly encouraging feature is the development of a network of disaster experts in Asia under ADPC's catalytic influence.

● Other activities

In addition to specific requests to assist national programs in Bangladesh, India, Indonesia, the Philippines, Sri Lanka, and Thailand, ADPC has also received requests from international agencies such as UNHCR, UNICEF, and the World Council of Churches, to help with their training programs in Asia.

LIBRARY AND REGIONAL DOCUMENTATION CENTER

The Library and Regional Documentation Center (LRDC) comprises a well-stocked library in engineering sciences and four specialized information centers dealing with renewable energy, environmental sanitation, ferrocement and geotechnical engineering. The Institute's advanced computer systems and access to mini, micro and mainframe computers, together with LRDC's personnel expertise in information repackaging and new information technologies enable the provision of training especially designed for information professionals, at three levels:

● **In-service training**, ranging from one week to nine months, provides theoretical and practical training in specific areas, such as the setting up of a database, newsletter production and publishing in general, and conventional library functions, including cataloguing or inter-library loan. Training is also provided in several library management systems which are available at LRDC.

● **Short courses**, from two weeks to a month, deal with specific aspects of information management, such as information repackaging, CDS Micro/ISIS, and other automated library management systems.

● **Three-month course**, from May to July each year, concentrates on the utilization of new technology in information management. This course draws on the expertise of international faculty. In 1986 participating faculty came from Australia, Denmark, Finland, Hong Kong, India and the United Kingdom, as well as experienced professionals from UNESCO, ESCAP and other UN organizations.

CONTINUING EDUCATION CENTER

Training courses continued to be a highly sought program at the Institute's Continuing Education Center (CEC), which conducted 26 continuing education activities for about 600 participants during 1986. Of the total number of CEC activities, five were organized as a result of CEC's promotional efforts. This achievement marked a major breakthrough in the center's promotional/marketing operations. In the main, CEC activities comprised contract courses. The average duration of each course was 2.5 weeks.

- A 12-week course on "Urban Drainage and Flood Control" was attended by 20 engineers from the Ministry of Public Works in the Royal Thai Government. The course, which focused on the technical, social, and economic aspects of the subject, was conducted by Thai and Filipino experts, as well as by consultants from AIT. It was funded by the Ministry of Public Works, Indonesia.

- Officials from the Malaysian Department of Environment participated in a four-week training course on "Environmental Impact Assessment (EIA) and Review". The emphasis was on the development of expertise among concerned government officials on how to review EIA reports by consultants and how to relate them to development plans and regulations. The course presented the perspectives of academics, EIA consultants, and bank officials. USAID provided funds for the course.

- The planning and management of rural development incorporate theory and practice in the social and political sciences, economics, as well as management. This basic principle was capsulized in a four-week regional course on "Managing Rural Development," which was attended by participants from three countries. A five-week complementary course on "Computer-Assisted Regional Planning" was also developed for a group of senior Sri Lankan government officials. Both courses were very well received because of their excellent blend of theory and practice. Faculty members from the Human Settlements Development Division were the principal collaborators in these courses.

- The four-week regional workshop on "Industrial Project Preparation Evaluation and Financing" gathered over 20 participants. They received intensive training on advanced methods and techniques used in various work aspects from project formulation to implementation. The course, which also covered industrial investment promotion, belongs to a UNIDO series of training programs on the subject.



Continuing education activities off- and on-campus.



INFORMATION DISSEMINATION

MOVING TOWARDS A NEW COMMUNICATIONS ERA

ATUNET helps chart a course for Asia

Established in January 1986, the AIT-Thailand Inter-University Network (ATUNET) is a computer network for education, research and information dissemination. It enables the exchange of research data, computer programs and other information among network members, as well as their utilization of computer resources and databases available within the network.

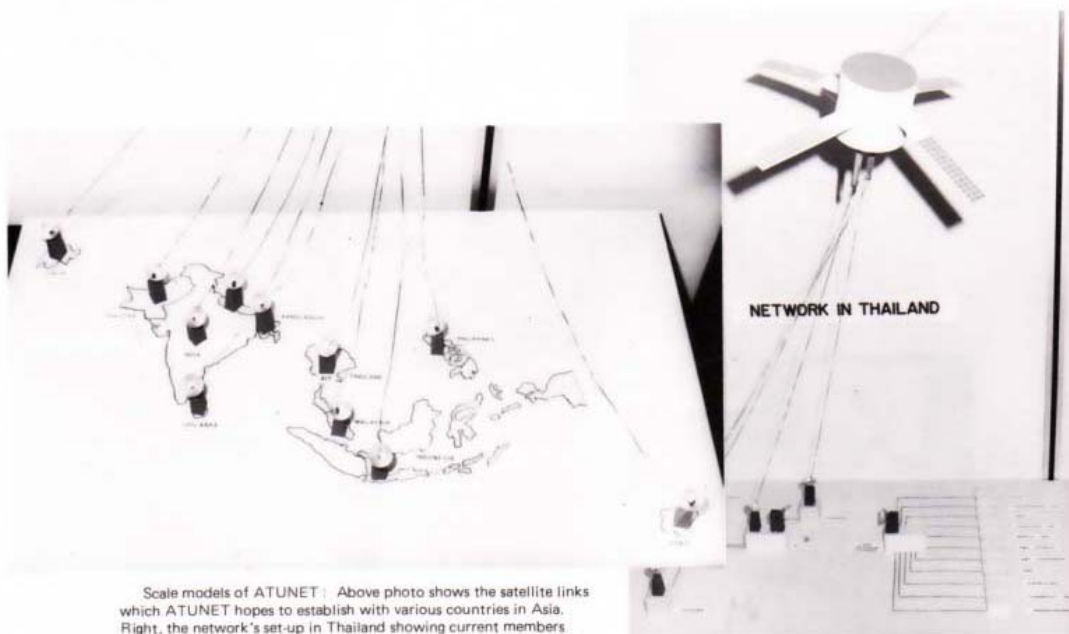
Its central node is AIT's Regional Computer Center (RCC), which is equipped with two mainframe computers with a total of 22 megabytes of multi-MIP computing power. Other facilities include 12 gigabytes of on-line storage and six CAD/CAM workstations.

A microwave link, donated by the French Government, connects AIT and the Laksi telephone exchange of the Telephone Organization of Thailand in Bangkok. Data is transmitted digitally through the microwave which has 10 circuits, each with a capacity of 64 K bps. Although it would be technically possible to extend this microwave to all nodes within Thailand, the high cost of extension, including repeater stations, has ruled out this option.

Due to the unavailability of packet switching services within Thailand at present, the nodes within the country have to resort to leased telephone lines or dial-up calls to link their computers to the network.

ATUNET is linked with various research networks covering most parts of the world.

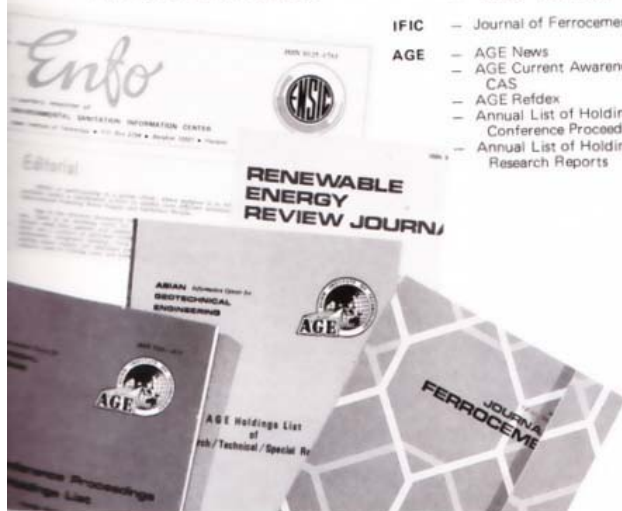
Eventually, a satellite link using Indonesia's Palapa satellite is expected to be established between ATUNET and its members in Thailand. Regionally, ATUNET seeks to link up with various Asian countries, using the Intelsat satellite.



Scale models of ATUNET: Above photo shows the satellite links which ATUNET hopes to establish with various countries in Asia. Right, the network's set-up in Thailand showing current members as well as the institutions which are expected to be linked up soon.

AIT's Specialized Information Centers

AIT has four specialized information centers: the Asian Information Center for Geotechnical Engineering (AGE), the International Ferrocement Information Center (IFIC), the Renewable Energy Resources Information Center (RERIC) and the Environmental Sanitation Information Center (ENSIC).



Regular Publications

- RERIC** – RERIC News
– Renewable Energy Review Journal
– Abstracts of AIT reports and publications on renewable energy resources
– RERIC Holdings List
- ENSIC** – Environmental Sanitation Reviews
– Environmental Sanitation Abstracts
– "ENFO" Newsletter
- IFIC** – Journal of Ferrocement
- AGE** – AGE News
– AGE Current Awareness Service-CAS
– AGE Refdex
– Annual List of Holdings of Conference Proceedings
– Annual List of Holdings of Research Reports

Occasional Publications

- RERIC** – AIT Portable Solar Dryer, English version (1986, 14 p.)
– AIT Portable Solar Dryer, Thai version (1986, 13 p.)
– Solar Thermal Component and System Testing, Proceedings of the Fourth Asian School on Solar Energy Harnessing, 12–20 December 1985, AIT (1986, viii ± 266 p.)
- IFIC** – Ferrocement Housing Bibliographies, Specialized Vol. 1
– English Focus (Fourth Edition), a pamphlet introducing IFIC and ferrocement
– Reflections, a compilation of papers published in the Journal of Ferrocement to commemorate the 10th anniversary of IFIC
- ENSIC** – Pilot Small-Scale Crop/Livestock/Fish Integrated Farm, AIT Research Report No. 184, by P. Edwards et al.
– Buffalo/Fish and Duck/Fish Integrated Systems for Small-Scale Farmers at the Family Level, AIT Research Report No. 198, by P. Edwards et al.
- AGE** – Bibliography on the Geology and Geotechnical Engineering of the Bangkok Area, by Prof. E. W. Brand, (1986, 53 p.)

AIT Library

At present, the library contains more than 140,000 volumes of books, technical reports, theses, documents, proceedings and bound journals, and subscribes to more than 800 journal titles in science, engineering and technology. Some 150 specialized indexing and abstracting journals facilitate the search of published literature.

A direct link with the TYMNET and TELENET telecommunication networks, through the satellite facilities of the Communications Authority of Thailand, enables on-line access to computerized data bases located in the USA and in 50 other countries. In addition, there is a large collection of maps, microtexts, vertical file material and films. Modern viewing and photocopying equipment, including microfilm, microfiche reader-printers, and microfilming facilities are available. Automation of library operations and data-base management benefit from the availability of six computer terminals and a text processor.

A Library Handbook and the LRDC Factsheet are issued to all users, giving detailed information on resources and services and the regulations which ensure effective and efficient use of library facilities. The library also maintains three up-to-date lists by computer printout: the monthly New Titles List, the List of Journals and Selected Serials in the AIT Library, and the List of AIT Publications and Student Theses.

Summary of Publications 1986

Division/Center	Research Journal Paper	Conference Paper/Proceedings	AIT Research Report	Book/Chapter in a Book	Total	Other Publications*
AFE	20	15	1	4	40	2
CS	5	5	–	1	11	–
EE	5	9	–	1	15	1
ET	9	13	1	3	26	12
GTE	4	19	–	5	28	4
HSD	15	9	–	2	26	43
IEM	21	5	–	2	28	13
SEC	3	10	–	6	19	1
WRE	4	20	5	–	29	2
ARRSTC	–	6	–	–	6	8
ELC	2	11	–	–	13	3
LRDC	–	5	–	–	5	19
RCC	–	4	–	–	4	2
TOTAL	88	131	7	24	250	110

*Monographs, working papers, newsletters, reference materials, course handbooks, lecture notes, reports, progress, interim, consultancy, etc., and research papers/reports from the academic divisions.

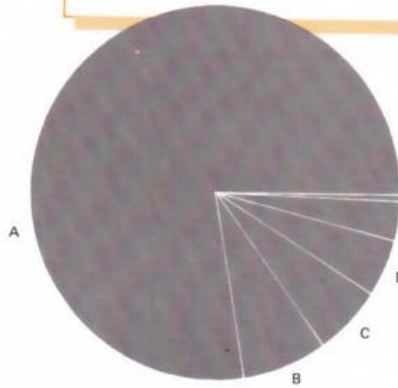
DONOR RELATIONS

103 donors contributed a total of Baht 351,304,000 in cash and kind during FY 1985-86. Twenty-two governments accounted for 77.59% of total contributions received. The top five donor governments were the Federal Republic of Germany, Thailand, Norway, Japan and Canada.

Contributions from 12 international organizations totaled 7.49%. Thirty-six national government agencies from 11 countries contributed 6.23% and the remaining 8.69% came from 9 foundations and 24 business firms and private individuals.

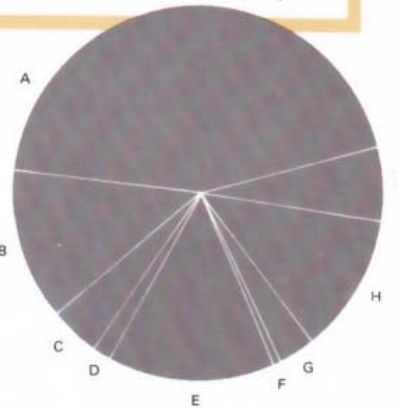
**Total Contributions in Cash and Kind
1985-86**

Types of Grant	Cash (Baht)	Kind (Baht)	Total (Baht)
Scholarships	153,592,000	—	
Research Projects	45,110,000	—	
Continuing Education	15,920,000	—	
Capital Grants/Buildings	5,000,000	—	
Equipment	8,848,000	42,790,000	51,638,000
Endowment Fund	2,045,000	—	
Operating Grant	12,722,000	—	
Faculty Secondment	8,554,000	33,777,000	42,331,000
Local Funds/Others	22,946,000	—	
	274,737,000	76,567,000	351,304,000



Percentage contribution by type of donor (1986)

A) Governments	77.59%
B) International Organizations	7.49%
C) National Government Agencies	6.23%
D) Foundations	4.88%
E) Business Firms	3.64%
F) Private Individuals	0.17%



Percentage contribution by type of grant (1986)

A) Scholarships	43.72%
B) Research Projects	12.84%
C) Continuing Education	4.53%
D) Capital Grants/Buildings	1.43%
E) Equipment	14.70%
F) Endowment Fund	0.58%
G) Operating Grant	3.62%
H) Faculty Secondment	12.05%
I) Local Funds/Others	6.53%

Total Contributions in Cash and Kind FY 1959-86

The total contribution received by the Institute since its foundation in 1959 amounts to Baht 3,461,778,000. The 10 major contributors are the United States of America (13.93%), Thailand (12.02%), Japan (10.88%), Federal Republic of Germany (8.41%), Canada (5.51%), Australia (5.33%), United Kingdom (4.51%), Republic of China (3.58%), Netherlands (3.06%) and France (2.42%).

Donors	Percentage
Governments	
Australia	5.33
Austria	0.03
Bangladesh	0.04
Belgium	0.81
Canada	5.51
RoC	3.58
Denmark	1.32
France	2.42
FRG	8.41
India	0.22
Indonesia	0.18
Iran	0.01
Israel	0.06
Italy	0.21
Japan	10.88
RoK	0.37
Nepal	0.03
Netherlands	3.06
New Zealand	0.95
Norway	1.70
Pakistan	0.11
Philippines	0.23
Sri Lanka	0.01
Sweden	0.04
Switzerland	0.71
Thailand	12.02
UK	4.51
USA	13.93
Vietnam	0.01
International Organizations	3.12
National Government Agencies	5.75
Business, Foundations,	14.44
Private and Others	
	100.00%



H.E. Mr. A.P. van Walsum, the Ambassador of the Netherlands to Thailand and Mr. L. Th. Hessels, Vice-President of the Board of Management of N.V. Philips Gloeilampenfabrieken (left and second from left, respectively) viewing the two Philips Microprocessor Development Systems donated to the microcomputer laboratory of CS Division.

H.E. Dr. Helmut Rueckriegel, the Ambassador of the Federal Republic of Germany to Thailand, presiding over the presentation of a mobile environmental lab from his Government.

H.E. Mr. Peter Motzfeldt, the Norwegian Ambassador to Thailand, with Mr. Y.Y. Kim, UNDP Regional Representative for Asia and the Pacific, and Dr. Thanat Khoman, AIT Chairman, during the Norwegian Government's presentation of a wide range of computer support and resources to the Institute.

Details of Donors' Support FY 1985-86

GOVERNMENTS

The Government of Australia under its current triennial grant 1985-88 made a total cash grant of B 13,600,000 for scholarships and the Regional Documentation Center. A total of 74 man/months of faculty and staff secondments was also provided.

The Government of Bangladesh contributed a cash grant of B 223,000 for the local currency fund.

The Royal Belgian Government under its current triennial grant 1984-86 provided a cash grant of B 192,000 for scholarships, as well as 68 man/months of faculty and staff secondments.

The Government of Canada through the CIDA-Broad Based Development Project 1983-87 contributed B 25,326,000 for scholarships, research projects, continuing education activities, and faculty support (direct hire positions) for a total of 32 man/months. In addition, 1 man/month of faculty secondment was provided.

The Royal Government of Denmark provided a cash grant of B 5,030,000 for scholarships, research projects and continuing education activities, as well as 33 man/months of faculty secondments.

The Government of the Republic of France contributed B 3,960,000 to support the Regional Documentation Center and research projects. In addition, equipment worth B 4,760,000 and 91 man/months of faculty and staff secondments were provided.

The Government of the Federal Republic of Germany through GTZ, DAAD, CDG and DSE provided a total cash grant of B 36,318,000 under its current triennial grant 1984-87. The contribution supported scholarships, research projects and continuing education activities. 96 man/months of faculty and staff secondments were also provided. In addition, equipment worth B 3,913,000 was given through GTZ.

The Government of India presented B 444,000 for the local currency fund and 21 man/months of short term faculty secondments.

The Government of Italy provided 12 man/months of faculty secondments as part of the Italy/UNDP/AIT project which covers the period 1985-89.

The Government of Japan made a total cash grant of B 26,544,000 for scholarships, equipment and operating costs. In addition, equipment worth B 829,000 and 84.5 man/months of faculty secondments were provided.

The Royal Norwegian Government contributed B 6,183,000 for scholarships. In addition, through the NORWAY/UNDP/AIT project, "Strengthening Computer Education and Computing Capability at AIT", Norway provided computers and accessories worth B 26,396,000, as well as 17.5 man/months of faculty and staff secondments.

The Royal Netherlands Government contributed a total cash grant of B 10,574,000 for scholarships, continuing education activities, books and Asian faculty support. Through the AIT/ISS project, it also provided a cash grant of B 1,592,000 for research projects, as well as 45 man/months of faculty secondments.

The Government of New Zealand under its current triennial grant 1985-88 donated B 4,292,000 for scholarships and continuing education activities.

The Government of Pakistan contributed a grant of B 1,365,000 for the AIT Endowment Fund and the local currency fund.

The Government of the Republic of Korea seconded a faculty member for six man/months.

The Government of the Republic of China provided a cash grant of B 11,695,000 for scholarships, as well as 22 man/months of faculty secondments.

The Government of the Republic of the Philippines contributed B 483,000 for the Institute's operating costs.

The Royal Government of Sweden contributed B 210,000 to support continuing education activities.

The Government of Switzerland contributed B 2,325,000 for scholarships, as well as 24 man/months of faculty secondments.

The Royal Thai Government made a total cash grant of B 37,025,000 for scholarships, construction fund, operating costs and tax reimbursements.

The Government of the United Kingdom through ODA and the British Council contributed B 1,038,000 for research projects and B 374,000 for scholarships. In addition, 66 man/months of faculty secondments were provided.

The Government of the United States of America contributed a total cash grant of B 13,433,000 for scholarships, research projects, continuing education activities, operating costs and faculty and staff support. Further, equipment worth B 2,400,000 and 56 man/months of faculty secondments were provided.

Below: Presentation of CIDA support by H.E. Mr. James Kelleher, Canadian Minister for International Trade, to AIT President North, Mr. Shintaro Abe, Chairman of the Executive Council of the ruling Liberal Democratic Party of Japan, presenting on behalf of the Japanese Government a start-up grant for the Japan- AIT Human Resources Development Fund to AIT Chairman, Dr. Thanat Khoman. H.E. Mr. Richard Smith (left), the Australian Ambassador to Thailand, signing the Fourth MOU between his Government and AIT.



Top photo: The British Minister for Agriculture, Fisheries and Food, H.E. Mr. Michael Jopling (third from left) touring the AFE Division's aquaculture project site. Above: H.E. Mr. William Andreas Brown (left), the American Ambassador to Thailand, presenting a USAID grant to the ASEAN Energy Conservation and Management Project. Below: Presentation of support from the Government of Pakistan by Mr. Iftikhar Hussein Kazmi (right), Charge d' Affaires of the Embassy of Pakistan in Bangkok.



Right photos, from top to bottom: H.E. Mr. Didier Bariani, the Deputy Foreign Minister of France, touring the LRDC. H.E. Mr. Patrick Nothomb (right), the Ambassador of Belgium to Thailand, presenting Belgian scholarship support. H.E. Mr. Bruce Brown (left), the Ambassador of New Zealand to Thailand, at the third triennial grant presentation from his Government. H.E. Mr. F. Kiaer, the Danish Ambassador to Thailand, presiding over the DANIDA scholarship grant presentation.



INTERNATIONAL ORGANIZATIONS

- Twelve international organizations namely, ADB, CEFIGRE-France, the Commonwealth Secretariat, EEC, ESCAP, FAO, the Mekong Secretariat, the International Atomic Energy Agency, UNESCO, UNICEF, UNDP and the International Training Center of Water Management (France) contributed a total cash grant of B25,442,000 for scholarships, sponsored research projects, and continuing education activities.
- In addition to a cash grant of B15,889,000 for scholarships, sponsored research projects and continuing education activities, EC also provided 12 man/months of faculty secondments.
- UNDP/FAO provided 17 man/months of faculty secondments.

NATIONAL GOVERNMENT AGENCIES

Thirty six national government agencies of the Governments of Canada, Denmark, Germany, Indonesia, Malaysia, Pakistan, Sri Lanka, Sweden, Thailand, United Kingdom, and the United States of America contributed a total cash grant of B20,330,000 for scholarships, sponsored research projects and continuing education activities.

FOUNDATIONS

- The AIT Foundation, Inc. made cash grants totalling B6,152,000. These grants were made possible by the following gifts to AITF:
 - B479,000 from the AIT Foundation for one scholarship.
 - B479,000 from the Starr Foundation for one scholarship.
 - B5,194,000 from IBM Americas/Far East Corp.
- The AIT-UK Appeal provided a grant of B895,000 contributed by Shell International Petroleum Co. Ltd. to support one faculty member in the Division of Energy Technology.
- Keidanren of Japan contributed B1,652,000 for scholarships.
- The Asia Foundation provided scholarship support worth B93,000.
- The Rockefeller Foundation seconded a faculty member for five man/months.
- The Lee Foundation of Singapore provided B1,439,000 for scholarships.
- The Education and Public Welfare Foundation of Thailand presented B1,000,000 to the AIT Endowment Fund.
- The Konrad Adenauer Foundation contributed B143,000 for continuing education activities.
- Winrock International contributed B192,000 to the scholarship program.

BUSINESS AND INDUSTRIES

- Twenty one business enterprises in Canada, Japan, Indonesia, the Republic of China, Thailand, Sri Lanka, United Kingdom and the United States of America contributed B12,525,000 for scholarships, sponsored research projects and continuing education activities.
- Shell International Petroleum Co. Ltd. provided 4 man/months of faculty secondment.
- IBM Americas/Far East Corp. provided 24 man/months of staff secondments in the Regional Computer Center.

PRIVATE AND OTHERS

- Mr. J.L. Marden of Hong Kong provided a scholarship grant of B446,000.
- Prof. Hisamatsu of Japan contributed B107,000 for the Institute's operating costs.

Above left: At the signing of the Government of ITALY/UNDP/AIT Grant Agreement, from left, AIT President North, AIT Chairman, Dr. Thanat Khoman, H.E. Mr. Battaglini, the Ambassador of Italy to Thailand, and Mr. Y.Y. Kim, UNDP Regional Representative for Asia and the Pacific. Above right: Mr. Bernard Coe (right), Chairman of the Shell Company of Thailand, presents Shell scholarships for ET Division students.

Summary of Donations Received Cash and Kind FY 1985-86(%)

GOVERNMENTS

Australia	4.87
Bangladesh	0.06
Belgium	0.62
Canada	7.22
Republic of China	3.69
Denmark	1.96
France	3.52
Federal Republic of Germany	12.73
India	0.42
Italy	0.17
Japan	8.92
Republic of Korea	0.08
Netherlands	4.12
New Zealand	1.22
Norway	9.55
Pakistan	0.39
Philippines	0.14
Sweden	0.06
Switzerland	1.00
Thailand	10.54
United Kingdom	1.06
United States of America	5.25

77.59%

FOUNDATIONS, BUSINESS PRIVATE, OTHERS

Foundations		
Keidanren, Japan	0.47	
Lee Foundation, Singapore	0.41	
Rockefeller Foundation	0.05	
AIT Foundation Inc.	3.30	
AIT-UK Appeal Fund--Shell International Petroleum Co. Ltd.	0.25	
Asia Foundation	0.03	
The Education and Public Welfare Foundation of Thailand	0.28	
Konrad Adenauer Foundation	0.04	
Winrock International	0.05	
Business		
Northwest Hydro Consultants Ltd., Canada	0.30	
Kawasaki Steel, Japan	0.04	
Nippon Kakan, Japan	0.02	
Nurtanto Aircraft Industry, Indonesia	0.15	
BES Engineering Corp., RoC	0.13	
China Technical Consultants, Inc., RoC	0.12	
Taiwan Power Co., RoC	0.97	
Chinese Petroleum Corp., RoC	0.12	
Taiwan Cement Corp., RoC	0.12	
Ital-Thai International Hotel Co., Thailand	0.01	
Siam Cement Co., Thailand	0.14	
Thai-Australia-World Bank Land Development Project	0.09	
Thai-German Plant Protection Program	0.08	
Southeast Asia Technology Co., Thailand	0.31	
Thai Agency Engineering Co., Thailand	0.02	
Consultants Technology Co., Ltd., Thailand	0.02	
Pass Consortium, Thailand	0.06	
A.R. Group Consulting Engineer, Thailand	0.18	
Ceylon Petroleum Corp., Sri Lanka	0.03	
Shell International Petroleum Co. Ltd.	0.54	
Wilbur Smith & Associates, USA	0.19	
Private and Others		
Mr. J. L. Marden, Hong Kong	0.13	
Prof. Hisamatsu, Japan	0.03	
Miscellaneous	0.01	

8.69%

NATIONAL GOVERNMENT AGENCIES

Canada			
IDRC	0.34	University Grants Commission	0.06
Mennonite Central Committee	0.03	Sweden	
McGill University	0.02	Swedish Agency for Research Cooperation	0.01
Denmark			
Danish Hydraulics Research Institute	0.08	Thailand	
Federal Republic of Germany			
Karlsruhe University	0.02	BMA	1.68
Indonesia			
Agency for Assessment and Application of Technology	0.02	Bank of Agriculture and Cooperatives	0.08
Petra Christian University	0.01	DMR	0.43
Lembaga Pendidikan Perkebunan	0.02	DTEC	0.02
University of North Sumatra	0.24	NESDB	1.77
Malang Research Institute for Food Crops	0.02	Ministry of Public Health	0.05
Ministry of Education and Research	0.03	NRC	0.01
Syah Kuala University	0.02	Ministry of Finance	0.13
Malaysia			
University of Technology	0.01	Thammasat University	0.09
Pakistan			
Pakistan Participant Training Program	0.02	Royal Thai Airforce	0.04
Sri Lanka			
Mahaweli Authority	0.04	EGAT	0.22
Rubber Control Department	0.02	National Agricultural Research Project	0.07

6.23%

INTERNATIONAL ORGANIZATIONS

ADB	0.03
CEFIGRE-France	0.02
Commonwealth Secretariat	0.02
EC	4.64
ESCAP	0.59
FAO	0.09
Mekong Secretariat	0.06
International Atomic Energy Agency	0.01
UNESCO	0.22
UNICEF	0.25
UNDP	1.55
International Training Center of Water Management	0.01

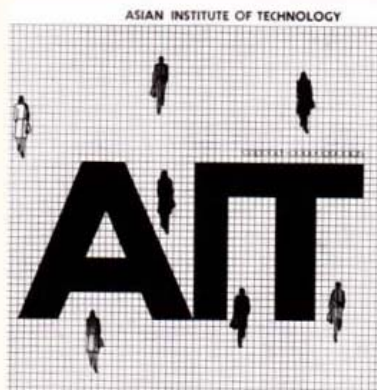
7.49%



Yuen Poovarawan
IEM '75
Thailand

To Yuen Poovarawan, currently a faculty member of Kasetsart University in Bangkok, goes the honor of being a three-time recipient of awards from the National Research Council of Thailand. Yuen, who holds the rank of Professor, and his team of computer experts from Kasetsart's Faculty of Engineering have been cited for their continuing work in developing database functions. Their latest award was made by the Council in July 1986 in recognition of a computer database application written by Yuen and his team. It was presented on behalf of the Council by the Thai Prime Minister, H.E. General Prem Tinsulanonda.

THROUGH THE EYES OF ALUMNI



Ashok Kumar Gupta
CO '71
India

Ashok Kumar Gupta is Coordinator of the Center of Transportation Engineering in the University of Roorkee where he holds the rank of Professor. He was appointed Lecturer in 1972 and Reader in 1976, when he also enrolled as a doctoral student in transportation engineering. A person given to hard work, Gupta gained by his decision to combine teaching and studying. In 1981, he received his Doctoral degree, and within the next four years, his Professorship.

Much of Gupta's work is focussed on studying and evaluating mixed traffic flow in developing countries, where Western-oriented traffic systems do not always apply. As Gupta points out, in India alone — where he is at present coordinating a 5-million Indian Rupee project for the Ministry of Transport on mixed traffic flow, transportation planning and related work — 13 types of overland vehicles move on the same roads.

Five other major transportation engineering projects at the University of Roorkee are under Gupta's responsibility. He is also advising foreign students, including a Pakistani enrolled at New South Wales University and an Egyptian studying in West Germany, as well as two students in Roorkee.

Gupta's views on the importance of local employment are difficult to refute. He stresses the need for trained manpower to stay in Asia to help accelerate regional growth and development.



Ildefonso Santos
HSD '82
Philippines

Ildefonso Santos is currently Assistant Department Manager for Corporate Planning in the Office of the Deputy Executive Secretary for Human Settlements, under the Office of the President of the Philippines.

Community development is a subject which Santos talks about with authority and from experience. He credits former AIT faculty member and HSD Chairman, Dr. Shlomo Angel, with "having taught us the business of planning, the importance of marrying practical work with theory". In his present work, Santos is intimately involved in a rural development project being implemented by the National Reconciliation and Development Program to which his office serves as secretariat. The program specifically addresses rebel returnees and incorporates integration activities, including livelihood and various programs for children. Santos brings to his present job experience he gained while working for the Ministry of Human Settlements Development, the de la Salle University where he is still an adjunct faculty member, and the Technology Resource Center of the Philippines.

Community development is a priority of the Philippine Cabinet, Santos points out. It is his too.



Laxman Prasad Ghimire
CO '72
Nepal

For Laxman Ghimire, overseas employment shed its desirability when his former adviser at AIT, Prof. Donald Drew, confronted him with a challenge: return to Nepal and there establish a career. To reinforce the challenge, Prof. Drew offered his personal guarantee of a job overseas should Ghimire fail in his own country.

Ghimire never took up his employment offer in Singapore. Fifteen years ago, he established East Consult (P) Ltd., a consultancy firm he and three friends engaged in during off-duty hours from the Road Department in the Ministry of Works and Transport.

East Consult (P) Ltd., now far removed from the constant struggle of early years, has been registering an average annual turnover of up to 10 million Nepalese Rupees, and employs a professional team of 70 engineers (many of whom are AIT alumni) and consultants. For its first-ever project East Consult was paid a fee of 4,000 Nepalese Rupees.

A measure of his success is that Ghimire no longer has to seek foreign partners as a way of getting ahead. Foreign firms now sign on his company for joint ventures in multi-disciplinary projects, ranging in scope from irrigation works to socio-economic studies.

Ironically, the lost opportunity of working abroad has been very rewarding. Ghimire recognizes the more tangible of these rewards, but the most sustaining is the sense of participating in his country's development.



Sein Mya
EE '81
Burma

Sein Mya's current employment at AIT as Senior Information Scientist at the Environmental Sanitation Information Center (ENSIC) provides vast opportunities to utilize her training in environmental management. Mya's responsibilities at ENSIC range from the preparation of project proposals and reports to funding agencies and affiliated institutions, to the production of various ENSIC publications, as well as the implementation of appropriate marketing strategies to increase ENSIC membership and broaden its range of services. The translation of ENSIC publications into selected languages -- at the initial stage, Bahasa Indonesia and French (mainly for French-speaking Africa) -- and the related task of marketing them are some new ventures which have been placed under Mya's supervision.

As a research associate during her initial employment at AIT, Mya had her experience of fieldwork in connection with a lake rehabilitation project for Kwan Payao and Bung Borapet lakes in Thailand.

Mya received a Bachelor of Science degree in Chemistry from the Rangoon Arts and Science University. She had also trained in bookkeeping and had in fact been a bank employee before enrolling at AIT. Returning to applied science, says Mya, brings with it a decidedly genuine sense of belonging.



A. D. Sugatadasa
HSD '82
Sri Lanka

As Deputy Director for National Planning in the Ministry of Finance and Planning in the Government of Sri Lanka, A.D. Sugatadasa has been involved in the development of projects and other policy-related work concerning his country's major export crops, particularly tea, rubber and coconut. Undeniably, his area of work is vital to the national economy, which explains why it has been for Sugatadasa an enduring source of career motivation and challenge.

Sugatadasa has been in the service of his Government since 1957. He has travelled extensively on behalf of his country, attending meetings and negotiating with funding agencies in connection with projects under his responsibility. He has also participated in various training programs in Asia and elsewhere.



Subin Pinkayan
WRE '61
Thailand

"Academic institutions are not 'ivory towers' and should not confine themselves to the closed walls of an academic haven." The speaker is Subin Pinkayan in his capacity as Minister of University Affairs in the Royal Thai Government. He exhorts universities and institutions of higher learning to broaden their perspective in teaching, research, consulting services and community work, including the preservation and promotion of culture. Being an integral part of society, academic institutions are expected to actively participate in the affairs of the State for the benefit of the public, Subin stresses.

Subin has been Minister of University Affairs since August 1986. His direct involvement with the education sector also includes a five-year assignment at AIT as an Associate Professor from 1969-74. He subsequently entered the private sector and served as President of SEATEC Consulting Engineers until 1985, when he joined the Thai Government as Deputy Minister of Finance. Subin has also served the Thai Government in various other capacities, including his election as Member of Parliament from the province of Chiang Mai.



Ramon de Mesa
EE '83
Philippines

Ramon de Mesa recently shifted his career focus from teaching human resources development to actual involvement in a field project. He is now Division Chief in charge of planning and programming for the Metro Manila Water Distribution Project, a 69 million US dollar program financed by the World Bank. The project, which involves the extension of water mains to utilize excess water, will provide an additional 100,000 water service connections benefitting up to 800,000 people. It will be completed within the next three years.

On his return from AIT, de Mesa resumed his position as Chief of the Technical and Social Development Programs Group in the Metropolitan Waterworks and Sewerage System, an agency attached to the Ministry of Public Works. His transfer to the Planning and Programming Department in 1985, as engineering specialist in water and wastewater treatment, triggered a subsequent move to actual project involvement. For de Mesa, this is a much-awaited professional challenge and one he is taking, as he takes most things, very seriously. The project has elected to use only Filipino expertise and de Mesa looks forward to similar opportunities in the future.



Karimul Haque Talukdar
WRE '71
Bangladesh

Karimul Haque Talukdar's extensive experience and thorough knowledge of Bangladesh are proving invaluable in the evaluation of tenders and the disbursement of funds for ADB-financed projects in his country. For the past three years, Talukdar has been with the Asian Development Bank's resident office in Bangladesh as Project Officer, a job to which he brings 19 years' experience in the design, planning and execution of irrigation projects for the Bangladesh Water Development Board. Prior to ADB, Talukdar had always been with the Board except for a 20-month study leave at AIT and a two-year employment contract in Iraq.

Previously a "fieldman", Talukdar is now essentially an administrator. His adeptness at his present job, he says, is due in no small measure to his experience in the field.



Mah Lok Abdullah
IEM '84
Malaysia

Mah Lok Abdullah returned to academia, as a Master's degree student in industrial engineering and management, 11 years after his award of a Bachelor's degree. "Adjusting to a university environment had not been all that easy," he says in retrospect. However, his many years of service with the Malaysian Government's National Productivity Center -- from where he took a leave of absence to attend AIT -- worked to his advantage. His experience in sales, marketing and in supervising consultancies contracted out by the NPC stood him in good stead.

Abdullah is back at NPC where he is Assistant Director in charge of the Productivity Promotion Unit. A nationwide productivity campaign, which he coordinates for NPC, is central to Abdullah's current work. The first campaign will end this year and Abdullah is full of enthusiasm for the second one's forthcoming launch. Increased productivity as a goal cannot be shunted aside, particularly during a recession-ridden period, he says.



Yong Foh Fui
EE '75
Brunei

Yong Foh Fui arrived at AIT -- the first student from Brunei, he recalls -- determined to obtain a degree in environmental engineering. That achieved, he returned to Brunei to work in the Water Section of the Public Works Department, Ministry of Development. Having served as a District Water Engineer for the past 11 years, he has played a major role in the planning, design, construction and operation of water treatment works in various parts of his country. His current responsibility covers three districts, including the capital.



Monthip S. Tabucanon
EE '78
Thailand

A master plan for Thailand's proposed Science Complex is now being prepared by a national committee of which Monthip S.

Tabucanon is a member. Monthip attributes her appointment, which was made by the Minister of Science, Technology and Energy, to the widespread interest generated by a project which she planned and worked out for the Office of the National Environment Board in Thailand. The proposed project, which concerns the establishment of an environmental research and training center within the framework of the ONEB, is now awaiting major financial assistance from the Japan International Cooperation Agency. The center will be located in the proposed Science Complex.

To Monthip's credit are a number of other initiatives which she has successfully undertaken for the ONEB in her position as Chief of Environmental Laboratory and Research. A good example is her role in obtaining technical assistance from Japan to support ONEB's laboratory and research projects. In addition, Monthip is actively involved in actual research. A major project, which started six years ago with the cooperation of Japanese experts, concerns the establishment of standard methods of analyzing water and wastewater in Thailand.

Monthip is also a member of a national committee created by the Ministry of Industry to set up quality standards for drinking water in Thailand.



Raymond H.K. Chuang
GTE '73
Republic of China

Once a small agency of constructors and engineers established in 1956 in the Republic of China, Ret-Ser Engineering Agency is now engaged in major projects in various parts of the United States, the Middle East and Asia.

Ret-Ser's General Manager in Thailand is Raymond H. K. Chuang, who has been in charge of a three-year port construction project in Songkhla province, since taking up his appointment in 1985. Chuang expects to complete the project by March 1988. Ret-Ser has recently completed a project to improve navigation channels along Bandon Harbour in Pattani province.

Chuang joined Ret-Ser in 1968, fresh from the National Cheng Kung University where he received his Bachelor's degree in Engineering. In 1971, he was selected as one of two Ret-Ser scholars to AIT. He resumed employment with Ret-Ser in 1973 as chief of an engineering team in a major free-way project being undertaken by the company.

After Chuang, 84 more Ret-Ser scholars from the Republic of China have attended AIT over the past 16 years.



Masahiro Imbe
WRE '74
Japan

Masahiro Imbe has engaged in the business of writing computer software for at least a decade. His latest, which he expects to complete shortly, analyses in detail various land development requirements in the construction of airports, roads and other infrastructure. The development of computer software in coastal engineering, another field of interest for the past three years, is also in view.

The Research Institute of the Tokyo-based Mitsui Construction Co., where he resumed employment after graduating from AIT, has been very supportive, says Imbe.

Two years ago, Imbe moved into consultancy and joined M & P Engineering Co. Ltd, a consulting firm and a Mitsui subsidiary, where he is involved in project survey, design and planning and, of course, in the writing of computer software.



Young Shik Shin
SEC '82
Republic of Korea

Young Shik Shin is working towards his promotion to the rank of Associate Professor within the next two years. His career advancement to date, from a Lecturer's post to that of an Assistant Professor, provides a good reading of his progress and performance in the academe. Shin is currently with the Department of Civil Engineering in Yeung Nam University in Gyongsan, in the Republic of Korea.

Before coming to AIT, Shin worked as a structural engineer at Hyundai Construction Co. "A career switch from the business sector to education can be a broadening experience," says Shin.

A LUMNI RELATIONS

16th AITAA Governing Board Meeting

To firm-up plans for a consortium of consulting firms owned/managed by AIT alumni, the 16th Governing Board Meeting (GBM) of the AIT Alumni Association has recommended the establishment of an information center of consulting firms which employ AIT alumni at the management level. The center will provide up-to-date information to AIT alumni and potential clients about resources and expertise available at AIT and from its alumni. Information about potential projects in various parts of the region will also be provided.

The 16th GBM, held from January 15-17, 1987 at the AIT Center, was attended by representatives from 14 AITAA chapters.

Other major matters taken up include the following.

- A committee will be appointed by the Governing Board to draft implementing guidelines of the AITAA Constitution.
- To offset the foreseeable reduction in the AITAA Budget after 1988, a fund-raising mechanism would have to be set up to cover various operational expenses.
- On the award of academic degrees, the Governing Board has recommended that M.Eng. degrees be awarded to graduates who hold a Bachelor's degree in engineering and who have completed the Institute's Master's program in one of the engineering divisions or in the Division of Computer Science. M.Sc. degrees should be awarded to graduates of any academic division whose Bachelor's degree is in science and to all graduates of the Division of Human Settlements Development who hold a Bachelor's degree in either engineering or science.

AITAA Scholarship Grant

One full scholarship for the Master's program at AIT was donated by AITAA from funds raised by AITAA chapters in 16 countries. It was presented by the outgoing AITAA President, Mr. Prida Thimakorn, to AIT President, Prof. Alastair North, during the 16th AITAA Governing Board Meeting.

ELECTION OF NEW AITAA PRESIDENT



The new AITAA President, Mr. Wisit Charernnit (CO '65), will assume office on February 1, 1987. The appointment of other members of the AITAA Executive Committee is expected to be announced within the first quarter of 1987. Dr. Nicanor Austriaco (SEC '75) retains his current position as Executive Secretary.

New AITAA Honorary Member

An Honorary Membership in the AIT Alumni Association (AITAA) has been awarded to Mr. Chang-Ching Wang, Secretary-General to the Executive Yuan of the Republic of China since 1984. The award is in recognition of the generosity and assistance extended by Mr. Wang to AITAA over the years.

The Honorary Membership, presented to Mr. Wang in May 1986, is the 69th to be awarded by the AITAA since its establishment in 1971. AITAA Honorary Members to date come from 18 countries and represent different professions.

Recipients of AITAA Honorary Membership awards include H.E. General Prem Tinsulanonda, Prime Minister of Thailand; Dr. Soedjatmoko, Rector of the United Nations University; Dr. C.F. Koo, Chairman of the Taiwan Cement Corp.; and other other illustrious statesmen, educators, businessmen and industrialists.

16th AITAA Chapter Opens

AITAA now has 16 chapters following the establishment of the Sri Lanka Chapter and the election of officers in 1986. There are 135 AITAA members in Sri Lanka.

The following have been elected:

President	Alujjage Don Sugatadasa (HSD '82)
Vice President	Malwila Gamini Dissanayake (EE '77 & '81)
Secretary/Treasurer	W.J.L. Shavindranath Fernando (EE '82)
Auditor	K. Janaka Weerasiri Perera (SEC '79)
Press Relations Officer	Pinsiri Jayajath Perera (ET '83)

AITAA CHAPTER ACTIVITIES

Philippines

Following the induction of officers of AITAA-Philippines, a plaque of appreciation was presented to General Rafael Ileto, the Philippine Defence Minister. The presentation was made by Mr. Ernie Tirona (SEC '65) on behalf of the incoming officers led by Chapter President, Mr. I. Santos (HSD '82), center.



Thailand

Honorary memberships in the AITAA-Thailand Chapter were awarded in June to Dr. Chai Muktabhant, Secretary General of the Royal Institute (seated, fifth from left) and Dr. Snoh Unakul, Secretary General of the National Economic and Social Development Board. The presentation was witnessed by some Thai alumni.



Japan

Members of AITAA-Japan together with some AIT alumni enrolled at the University of Tokyo organized a welcome reception for AIT President, Prof. Alastair North, when he visited Japan in March. Accompanying Prof. North was former AIT Vice President for Academic Affairs, Prof. Fumio Nishino.

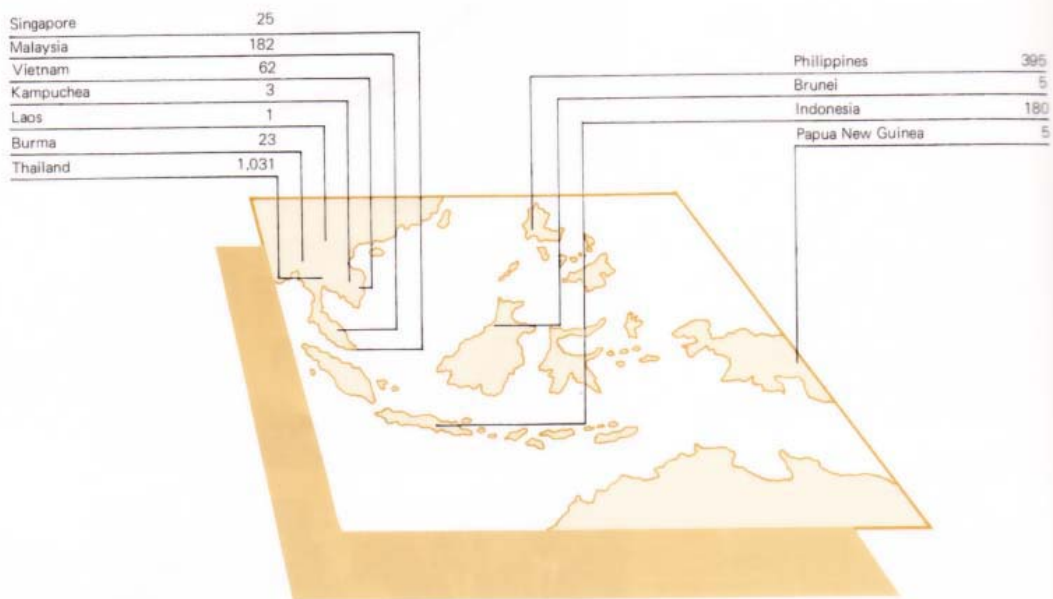


Indonesia

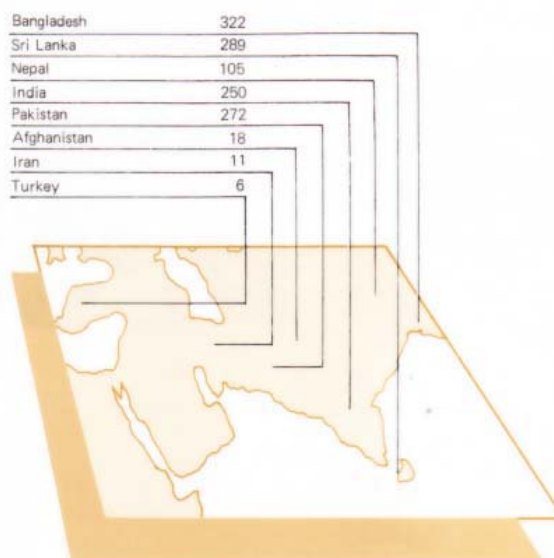
In August, members of the AITAA-Indonesia Chapter held a seminar to discuss the impact of AIT education in national development programs in developing countries, particularly Indonesia. Seminar participants/guests included Prof. Hariadi P. Soepangkat, Rector of the Bandung Institute of Technology, and former faculty members, Prof. John Hugh Jones and Mr. Scott Younger.



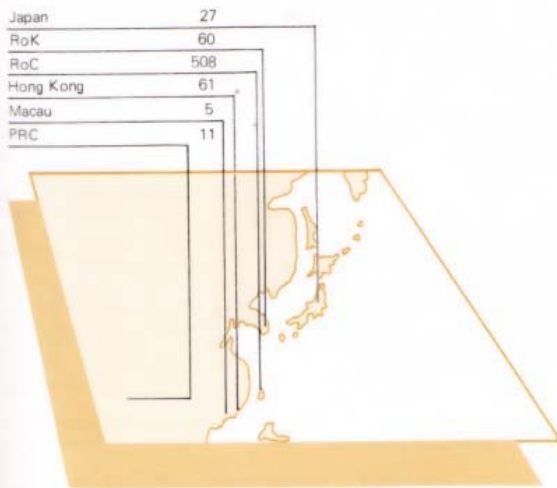
Alumni Distribution by Country 1961-86



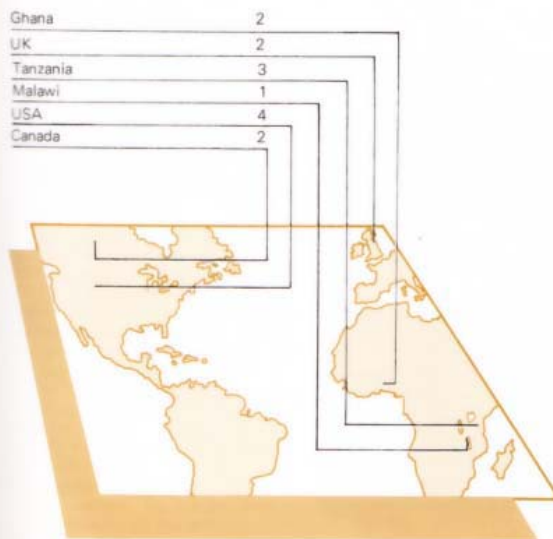
South East Asia and the Pacific



South and West Asia



East Asia



North America, Europe and Africa

AITAA Chapter Presidents

The AIT Alumni Association (AITAA) now has 2,151 members in 16 chapters. Current Chapter Presidents are as follows:

Bangladesh
Dr. Hamidur Rahman Khan
WRE '65

Brunei
Mr. Yong Foh Fui
EE '75

Republic of China
Mr. Y.Y. Tseng
CO '73

Hong Kong/Macau
Mr. Joey T.W. Ying
EE '76

India
Dr. Ashok Kumar Gupta
CO '71

Indonesia
Dr. Dradjat Hoedajanto
SEC '74

Japan
Mr. Yoshiaki Takahashi
HSD '79

Republic of Korea
Dr. Son Seung-Yo
SEC '70

Malaysia
Mr. Mah Lok Abdullah
IEM '84

Nepal
Mr. Laxman Prasad Ghimire
CO '72

Pakistan
Mr. Iqtidar A. Chaudhri
WRE '64

Philippines
Mr. Ildefonso Santos
HSD '82

Sri Lanka
Mr. A.D. Sugatadasa
HSD '82

Singapore
Mr. Ho Siew-Koon
WRE '71

Thailand
Mr. Sommart Boonpiraks
WRE '61

U.S.A.
Mr. Gregorio I. Patron
WRE '66

CENTRAL ADMINISTRATION

Major developments in Central Administration during 1986 included the computerization of the General Ledger, the transfer of the Housing Section to the Physical Plant Department, and the construction of AIT's first internally funded building.

Computerization of Financial Records and Reports

Manual recording and reporting of the General Ledger ceased on July 1, when computerization of all financial records and reports came into full effect. This significant development was the result of two years of preparation by the Finance Department and the Computer Project Team, which was established in 1985. The software utilized is Software International's General Ledger (SIGL) package.

The computerization of Accounts Payable, using Software International's Accounts Payable (SIAP) package, is expected to be implemented by early 1987.

In total, over 300 financial and management reports, as well as reports of research projects, were computerized during 1986.

As 1986 drew to a close, concerted efforts had firmed up to produce financial and statistical reports which are of increasing use to management.

Reorientation of the Finance Department: the infusion of new goals and objectives

At a meeting presided over by the incumbent Bursar and the Institute President, six major objectives and 21 goals were conveyed to all employees of the Finance Department. Resulting achievements to date include improvements in record keeping, management reporting, inventory

APPOINTMENT OF NEW BURSAR



Mr. Edward Mayer took up his appointment as Bursar on August 21, succeeding Mr. James Bradridge. Mr. Mayer, an American national, has a strong background in financial management, budgeting and data processing.

Mr. Bradridge who completed two years of service with the Institute is credited for his efforts in the successful computerization of the Institute's financial records.

Energy Conservation Program

Energy conservation is an ongoing program at AIT. A major project completed in 1986 was the installation of insulation in the academic and administration buildings. The insulation, installed at a cost of Baht 1.7 million, is expected to have a life of 10 years.

In addition, two major projects for energy conservation were developed and approved.

The first is the modification of the AIT air conditioning system. This involves the installation of timers, thermostats and motorized valves to cut off chilled water supply needed for cooling rooms after office hours, with provision for resuming supply for a limited

period of one hour at a time, on demand. Implementation of this project will cost approximately Baht 1.3 million, providing a payback period of about 2.5 years.

The second project involves the installation of a 24kV grid. This project will cost Baht 2.3 million with a payback period of about three years. According to this design, four transformers with HV switchgear will be disconnected from the system and their loads will be shared by other substations. For reliability purposes, the existing radial type of HY grid will be changed to a loop type. Further action required to enhance the reliability of the system will be done at a later stage.

practices, computer tape storage, increased opportunities for training and job promotion, as well as improved communication between personnel and management. The Finance Department is now providing necessary accounting assistance to the AIT Student Union.

AIT's investment policy is being reformulated with a view to generating higher yields.

Computerization of Inventory, Personnel and Motor Pool

The Administrative Data Processing Unit (ADPU) in conjunction with the Personnel Section of the Administrative Services Department implemented IBM's Interactive Personnel System (INTERPERS), providing computerized information about all currently and formerly employed personnel at the Institute. Data concerning all job positions within the Institute are also provided.

A perpetual inventory program concerning the sale of duty reimbursible wines and spirits was introduced. Similar inventory systems for the Physical Plant and the Bookstore are underway. Also being developed are computerized graphical and statistical management indicator file systems.

Personnel

Central Administration kept its total number of personnel in check, despite the increasing workload of its sections and departments. Among the few appointments made were that of the AIT Center General Manager Designate, Mr. Gerald Knight, and of an additional programmer at ADPU.

Reorganization of Auxiliary Services and Transfer of Housing Section to Physical Plant Department

The reorganization of Auxiliary Services, which formerly included the AIT Center and the Housing Section, came into effect in November. Resulting from the reorganization were the transfer of all on-campus housing responsibilities to the Physical Plant Department, the creation of the position of General Manager of AIT Center (IFS Grade V) and the abolition of the position of Director of Auxiliary Services (IFS Grade IV). The transfer move further broadened the responsibilities of the Physical Plant, which is AIT's largest administrative department.



Staff Housing — 5.

Construction of ST-5

The construction of ST-5, an 18-apartment building for faculty and staff, was completed in 1986. This is the first internally funded building in AIT's history.



Campus scenes.



Appendices

Organizational Chart of AIT

List of Senior Administrative Officers

List of Faculty Members

Board of Trustees

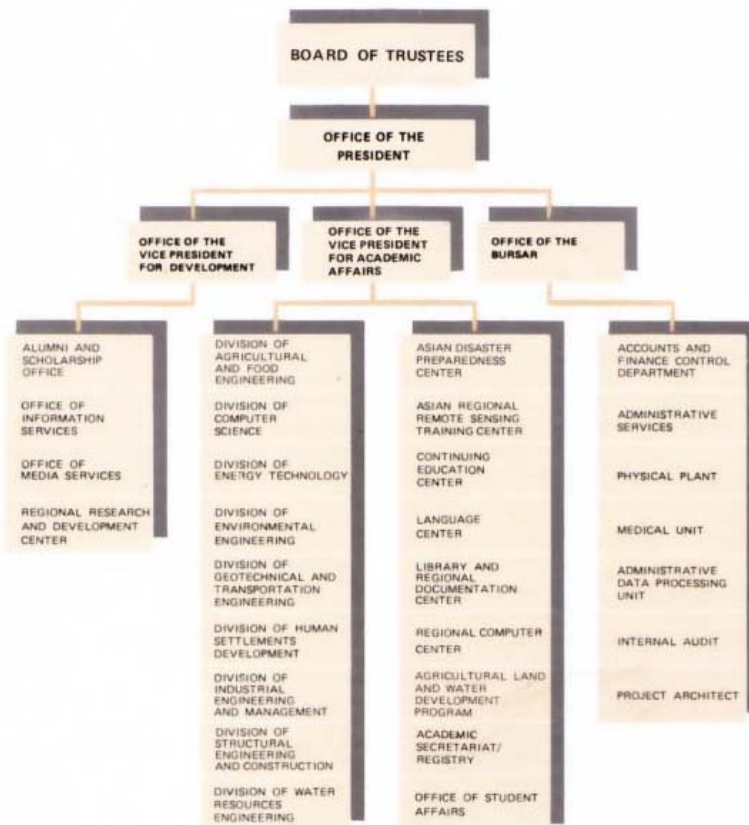
Balance Sheet as at June 30, 1986

Portfolio of Completed and On-Going Contract and Grant Research

Continuing Education Center 1986 Program

ABBREVIATIONS

ORGANIZATIONAL CHART OF AIT



As from January 1987

Senior Administrative Officers

SENIOR STAFF

President	Prof. Alastair North
Vice President for Academic Affairs	Prof. Gajendra Singh
Vice President for Development	Prof. Ricardo P. Pama
Bursar	Mr. Edward Mayer
Academic Secretary	Mrs. Emilie Ketudat
Academic Planning Officer	Mr. W.P.P. Abeydeera
Director of Administrative Services	Mr. Nipon Masavisut
Director of Finance	Mr. Pongsagti A. Vejjajiva
Director of Physical Plant	Mr. Noppadon Muangkroot

DIVISION CHAIRMEN

Division of Agricultural and Food Engineering	Dr. David Gee-Clough
Division of Computer Science	Dr. H.N. Phien
Division of Energy Technology	Dr. N.J.D. Lucas
Division of Environmental Engineering	Dr. Chongrak Polprasert
Division of Geotechnical and Transportation Engineering	Prof. Prinya Nutalaya
Division of Human Settlements Development	Mr. Ray Archer
Division of Industrial Engineering and Management	Dr. Mario Tabucanon
Division of Structural Engineering and Construction	Dr. Akio Hasegawa
Division of Water Resources Engineering	Dr. Ashim Das Gupta

CENTER DIRECTORS

Continuing Education Center	Dr. Nicanor C. Austriaco
Language Center	Mr. David Hall
Library and Regional Documentation Center	Mr. Arthur Vespry
Regional Computer Center	Dr. George Lewis
Regional Research and Development Center	Dr. Jacques Valls
Asian Regional Remote Sensing Training Center	Dr. Kaew Nualchawee
Asian Disaster Preparedness Center	Lt. Col. Brian Ward (Ret.)

STUDENT AFFAIRS

Dean of Student Affairs	Mrs. Hilary Wongkaew
Student Union President	Mr. Fernando Cal

Prof. Singh succeeded Prof. F. Nahino (Apr 84 to 31 Aug 86)
 Mr. Mayer succeeded Mr. James Bradridge (Aug 84 to 20 Aug 86)
 Dr. Phien succeeded Dr. Vilas Wuwongse who was Acting Chairman (1 Feb 86 to 31 Aug 86)
 Dr. Chongrak was Acting EE Chairman (1 Aug 85 to 1 Jan 86) prior to his appointment as Chairman
 Mr. Archer succeeded Prof. Hiran Dias (1 Apr 86 to 30 Nov 86), and
 Prof. Karl Weber (Apr 82 to 31 March 86)
 Dr. Tabucanon succeeded Dr. O. Fujiwara (Aug 84 to 31 July 86)
 Mr. Cal succeeded Mr. D. Misra (May 86 to Dec 86)

As from January 1987

Full Time Faculty Members

- Raymon W. Archer** B.A. (Hons. in Econ.), Sydney; M.R.A.P.I. Associate Professor, HSD
- Buddy H. Atwell** B.S., Ph.D., Texas A & M. Associate Professor, ARRSTC
- Nicanor C. Austriaco** B.S.C.E., National Univ. of the Philippines; M.Eng., D.Eng., AIT. Director, CEC
- A.S. Balasubramaniam** B.Sc., Ceylon; Ph.D., Cambridge. Professor, GTE
- Dennes T. Bergado** B.S.C.E., Mindanao State; M.Eng., AIT; Ph.D., Utah State. Assistant Professor, GTE
- S.C. Bhattacharya** M.E., Roorkee; Ph.D., Cambridge. Associate Professor, ET
- Janos T. Bogardi** Dipl. Ing., Technical Univ. Budapest; Dr. Ing., Karlsruhe. Associate Professor, WRE
- Denis Borel** B.M.T., Lycee J.B. Say, Paris; Dipl. Ing., Ecole d'Ingenieurs Arts & Metiers; Dr. Ing., Sciences Sociales, Toulouse. Associate Professor, ARRSTC
- Derick Maxwell Brotton** B.Sc., London; Ph.D., Leeds; D.Sc., Manchester; C.Eng., F.I. Struct. E., F.I.C.E. Professor, SEC
- Michael Brown** M.A., St. Andrews; PDESL, Leeds. Assistant Professor, ELC
- Sarvesh Chandra** B.E., M.S., Univ. Baroda; M.Tech., Ph.D., IIT, Kanpur. Associate Professor, GTE
- Fried Christoph** Dipl. Ing., Dr. Ing., Technical Univ. Braunschweig. Associate Professor, WRE
- H.R. Clarke** B.A., Macquarie; M.Ec., Ph.D., Australian National. Associate Professor, IEM
- Rene Codoni** Ph.D., Basle. Associate Professor, ET
- Ashim Das Gupta** B.E., Gauhati; M.Eng., D.Eng., AIT. Associate Professor, WRE
- Hiran D. Dias** M.A., Ph.D., Cambridge. Professor, HSD
- Mogens Dyhr-Nielsen** M.Sc. (Civil), Technical Univ. Denmark; Ph.D., Colorado State. Associate Professor, WRE
- Peter Edwards** B.Sc., Liverpool; Ph.D., Texas. Professor, AFE
- Apisit Eiumnoh** B.Sc., Kasetsart; M.Sc., Sheffield; Ph.D., North Carolina State. Assistant Professor, ARRSTC
- A.B. Etherington** B.Arch., Cornell; M.A., Hawaii; M.E.P., Philippines; M. Arch., McGill; Ph.D., Hawaii. Associate Professor, HSD
- R.H.B. Exell** M.A., D.Phil., Oxford. Professor, ET
- Okitsugu Fujiwara** B.S., M.S., Osaka; M.S., Stanford; Ph.D., Yale. Associate Professor, IEM
- Joseph A. Gartner** B.Agric.Sc., Queensland; Ph.D., Reading. Associate Professor, AFE
- David Gee-Clough** B.Sc., M.E., Wales; M.S., Cal. Tech.; Ph.D., California (Davis). Associate Professor, AFE
- Sarah E. Goldin** B.A., M.A., Brown; B.A., New York; M.S., Ph.D., Carnegie-Mellon. Assistant Professor, ARRSTC
- Chandra P. Gupta** B.Sc., Agra; B.Tech. (Hons.), M.Tech., Ph.D., IIT, Kharagpur. Professor, AFE
- David R. Hall** B.A. (Hons.), Birmingham; M.A., Essex; PGCE, Leeds. Associate Professor and Director, ELC
- Keisuke Hanaki** B.Eng., M.Eng., D.Eng., Tokyo. Assistant Professor, EE
- Akio Hasegawa** B.Eng., M.Eng., D.Eng., Tokyo. Associate Professor, SEC
- R.A. Hawkey** B.A., Cambridge; M.A., Reading; Ph.D., London. Associate Professor, ELC
- Fude I** B.C.E., National Tsing Hua; Ph.D., Iowa. Professor, EE
- Sarath G. Ilangantileke** B.Sc., Ceylon; M.S., Ph.D., Michigan. Associate Professor, AFE
- Nazrul Islam** B.A. (Hons.), M.A., Dacca. Associate Professor, HSD
- Jens Raunsø Jensen** M.Sc., Ph.D., Royal Vet. and Ag. Univ., Copenhagen. Associate Professor, AFE
- Vinod Kumar Jindal** B.Sc.A.E., Pattnagar; M.S., Nebraska; Ph.D., Pennsylvania State. Associate Professor, AFE
- Hans Detlef Kammeier** Dipl. Ing., Reg. Brmstr, Munich. Associate Professor, HSD
- Kanchana Kanchanasut** B.Sc., Queensland; M.Sc., Melbourne. Instructor, CS
- Worsak Kanok-Nukulchai** B.Eng., Chulalongkorn; M.Eng., AIT; Ph.D., California (Berkeley). Associate Professor, SEC
- Pisidhi Karasudhi** B.Eng., Chulalongkorn; M.Eng., Chulalongkorn-SEATO Graduate School; Ph.D., Northwestern. Professor, SEC
- Brian Kenny** M.A., LTCL, Dip. TESOL. Associate Professor, ELC
- Georges Kozminski** Ing., Ecole Nationale Superieure de Geologie, Nancy. Instructor, ARRSTC
- France Lasnier** Ph.D., Ecole des Mines de Paris. Assistant Professor, ET
- Matthew Laszewski** M.A., Wisconsin-Madison. Assistant Professor, ELC
- Bindu Nath Lohani** B.E. (Hons.), Birla Institute; M.E., North Carolina State; D.Eng., AIT. Associate Professor, EE
- N.J.D. Lucas** M.A., Ph.D., Pembroke College, Cambridge. Associate Professor, ET
- John E. Lukens** B.S., Worcester Polytechnic; Ph.D., Cornell. Associate Professor, ARRSTC
- Kanchit Malaivongs** B.Eng. (Hons.), Chulalongkorn; M.Eng., D.Eng., AIT. Associate Professor, CS

- Milton J. Marcus** B.S., A.M., MBA., Ph.D., Columbia.
Director, RCC
- Kazuaki Miyamoto** B.Eng., M.Eng., D.Eng., Tokyo.
Assistant Professor, GTE
- Masakazu Mizutani** B.Sc.A.E., M.Sc.A.E., Ph.D., Tokyo.
Associate Professor, AFE
- Takahiro Murata** B.Eng., M.Eng., D.Eng., Tokyo.
Associate Professor, GTE
- Samorn Muttamara** B.Sc., Chulalongkorn; M.S., Oregon State.
Associate Professor, EE
- Steen Asger Nielsen** M.Sc., Technical Univ. Denmark.
Associate Professor, WRE
- Jens Møller Nielsen** M.Sc., Ph.D., D.Sc., Royal Vet. and Ag. Univ.,
Copenhagen.
Professor, AFE
- Pichai Nimityongskul** B.Eng., Chulalongkorn; M.Eng., D.Eng.,
AIT.
Associate Professor, SEC
- Fumio Nishino** B.Eng., M.Eng., Tokyo; Ph.D., Lehigh.
Professor, SEC
- Athapol Noomhorm** B.Sc., Kasetsart; M.Eng., Texas; Ph.D.,
Louisiana.
Assistant Professor, AFE
- Alastair M. North** B.Sc., Aberdeen; Ph.D., Birmingham.
Chair Professor in Applied Science.
- Kaew Nualchawee** B.S., Chulalongkorn; M.S., Connecticut;
Ph.D., Colorado State.
Associate Professor and Director, ARRSTC
- Prinya Nutalaya** B.A., M.S., Ph.D., Colorado State.
Professor, GTE
- Takashi Onishi** B.Eng., M.Eng., D.Eng., Tokyo.
Assistant Professor, HSD
- Hermann Maria Orth** Dipl.Ing., Dr.Ing., Karlsruhe.
Associate Professor, EE
- Magnus B. Overby** B.Sc., M.Sc., Oslo.
Assistant Professor, CS
- Yoshiyuki Osakaya** B.Eng., Hokkaido; M.Eng., D.Eng., Tokyo.
Assistant Professor, HSD
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Chulalongkorn-SEATO Graduate School; Ph.D., St. Andrews.
Professor, SEC
- Huynh Ngoc Phien** B.Sc., B.A., Hue; M.Sc., D.Tech.Sc., AIT.
Associate Professor, CS
- Chongrak Polprasert** B.Eng., Chulalongkorn; M.Eng., AIT;
Ph.D., Washington.
Associate Professor, EE
- Md. Aatur Rahman** B.Sc.C.E., BUET, Dacca; M.S., Ph.D., Texas
A & M.
Associate Professor, AFE
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Associate Professor, GTE
- Kurt T. Rudahl** B.A., New York; M.S., Wisconsin.
Assistant Professor, ARRSTC
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Ph.D., MIT.
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Assistant Professor, ET
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Ph.D., Free Univ., Brussels.
Assistant Professor, IEM
- Dirk L. van Oudheusden** B.S., State U., Antwerp; M.S., Ph.D.,
Free Univ., Brussels.
Associate Professor, IEM
- H. Arthur Vespry** B.Arch., Ottawa; B. Lib.Sc., McGill;
M. Lib.Sc., Western Ontario.
Director, LRDC
- S. Vigneswaran** B.Sc. (Hons.), Peradeniya; M.Sc., AIT; Docteur
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- Martin Wieland** Dipl.Ing., ETH; Dr.Sc. Techn., Swiss Federal
Inst. of Tech.
Associate Professor, SEC
- H. Wongkaew** B.A., Dip.Ed., TEFL., Sydney; M.A., Lancaster.
Assistant Professor and Dean of Student Affairs
- Bruce K. Worcester** B.S., Maine; M.S., Arizona; Ph.D., Iowa State.
Associate Professor, ARRSTC
- Vilas Wuwongse** B.Eng., M.Eng., D.Eng., Tokyo Inst. of Tech.
Assistant Professor, CS

Associated Faculty Members

AFE

Wanpen Chaicumpa D.V.M. (Hons.), Kasetsart; Ph.D., Adelaide.
(Member of Mahidol University, Thailand)

C. Kwei Lin B.Sc., Chung Hsin; M.Sc., Alberta; Ph.D., Wisconsin.
(Member of the National Inland Fisheries Institute, Thailand)

Paiboon Prabuddham B.Sc. (Agri.), Kasetsart; M.S., Philippines;
Ph.D., Illinois.
(Member of Kasetsart University, Thailand)

CS

Somkuan Bruminhent B.Eng., Chulalongkorn; M.Eng., Ph.D.,
Georgia.
(Member of the Telephone Organization of Thailand)

Duangkaew Sawamiphakdi B.A., Australian National; M.Sc.,
Ph.D., Iowa.
(Member of Thammasat University, Thailand)

ET

Phulporn Saengbangpla B.Eng., Chulalongkorn; M.Sc., (M.E.);
CBI Cert., Manchester;
(Member of Chulalongkorn University, Thailand)

EE

Pakit Kiravanich B.Eng., M.Eng., Chulalongkorn; Ph.D.,
Oklahoma State.
(Member of the National Environment Board of Thailand)

Wanchai Pothiphichitr B.Sc., D.I.C.; Ph.D., London.
(Member of Chulalongkorn University, Thailand)

GTE

Prapansak Buranaprapa B.Eng. (Hons.), Chulalongkorn; M.Eng.,
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(Member of the Highway Department, Thailand)

Niyom Deeswasmongkol B.Sc., Chulalongkorn; M.Sc., AIT;
Ph.D., Kobe.
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Surachat Sambhandharaksa B.Eng., New South Wales; M.Eng.,
AIT; D.Sc., Massachusetts Inst. of Tech.
(Member of Chulalongkorn University, Thailand)

Yongyuth Taesiri B.Eng., Khon Kaen; M.Eng., AIT; Ph.D.,
Florida.
(Member of the Highway Department, Thailand)

Yordphol Tanaboriboon B.S., M.S., Oklahoma State; Ph.D.,
Virginia Polytechnic Institute and State University.
(Member of the King Mongkut's Institute of Technology,
Thonburi, Thailand)

Prapon Vongvichien B.Eng., Chulalongkorn; M.Eng., AIT;
Ph.D., Ohio State.
(Member of the Office of Policy and Planning, Ministry of
Interior, Thailand)

HSD

Jamlong Atikul B.C.A. (Econ.), Victoria; M.Com., Auckland;
Ph.D., Cornell.
(Member of the National Institute of Development Adminis-
tration, Thailand)

Somsak Tambunlertchai B.A., Thammasat; M.A., Ph.D., Duke.
(Member of Thammasat University, Thailand)

IEM

Virabongsa Ramangkura B.A., Chulalongkorn; M.A., Ph.D.,
Pennsylvania.
(Member of Chulalongkorn University, Thailand)

Tasman Smith B.A., Monash; Ph.D., Oxford.

SEC

Vithool Jearkjirm B.Eng., Chulalongkorn; M.S., Ph.D., Purdue.
(Assistant Managing Director, Thai Yong Panich, Co., Ltd.,
Thailand)

Ping Kunawatsatit B.Eng., Chulalongkorn; M.Eng., Kyoto;
Ph.D., Purdue.
(Member of Chulalongkorn University, Thailand)

WRE

Saravuth Pratishhananda B.E. (Hons.), New South Wales;
M.Sc., Manitoba; Ph.D., Utah State.
(Member of Chulalongkorn University, Thailand)

Affiliated Faculty Members

AFE

Apisit Eiumnoh B.Sc., Kasetsart; M.Sc., Sheffield; Ph.D., North
Carolina State.

Tomas Keilbach Dipl.Ag., M.Sc., Justus-Liebig Universitat,
Germany.

CS

Regino L. Gonzales, Jr. B.S.C.E., Cebu Inst. of Tech.; M.Eng.,
AIT.

EE

Eddie K.S. Hum B.Sc., Nanyang Univ., M.Sc., D.Tech.Sc., AIT.

ET

Dang Van Giap Post-graduate (Econ.), Institut National Des
Sciences et Techniques Nucleaires, Saclay; Ph.D., Pantheon,
Sorbonne.

Wolfgang Tentscher Dipl.Ing., Technical Univ. Berlin.

SEC

Satyendra P. Gupta B.Sc. (Eng.), Birla Inst. of Tech.;
M.C.E., Ph.D., Brigham Young.

Visiting Faculty Members

AFE

- Peter D. Chudleigh** B.Sc., Ph.D., New South Wales.
Nivritti G. Bhole B.Sc. (Agr.), Nagpur; B.Sc. (Agr. Eng.), Allahabad; M.Tech., Ph.D., IIT, Kharagpur.
B. Anjanayulu B.Tech. (Hons.); Ph.D., IIT, Kharagpur, India.

CS

- Finn A. Aagesen** M.Sc., Ph.D., Norway Inst. of Tech.
Eiji Arai B.Eng., M.Eng., D.Eng., Tokyo.
K.K. Biswas B.Tech., IIT, Madras; M.Tech., Ph.D., IIT, New Delhi.
R.R.B. Braek M.Sc., Trondheim.
Rolf Henriksen M.Sc., Ph.D., Norway Inst. of Tech.
L. Niemi Dipl., Bonn; Dr.rer. nat., Cologne.
Geir F.H. Skylstad M.Eng., Trondheim.
R. Sadananda B.E., Mysore; M.E., Roorkee; Ph.D., IIT, Kanpur.

ET

- Vijay R. Raghavan** M.Tech., Ph.D., IIT, Madras.
A.T. Reddy Ph.D., Perpignan, France.
Richard Sanchez 3rd Cycle Doctorate, State Doctorate, Paris Sud; Ph.D., Washington.
N. Naganna M.A., Andhra; M.A., Delhi School of Economics; Ph.D., Gokhale Institute of Politics and Economics.
Eddy A. Mesritz M.Sc., Delft.
Bertrand Chateau Ph.D., Grenoble, France.
Basoor T. Nijaguna M.A.Sc., Ph.D., Toronto.

EE

- Dirk A.M.J. Wilms** Ph.D., Leuven.
Hang-Sik Shin B.S., Seoul National; M.Sc., Ph.D., Pennsylvania State.
D.S. Bhargava B.E., Rajasthan; P.G.D., M.E., Roorkee; Ph.D., IIT, Kanpur.

GTE

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HSD

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Gerardus M. Sibbing Doctorandus, Erasmus, Rotterdam.
Khal S. Thio B.A., Amsterdam; Ph.D., Wageningen.
Joao P.C. Guimaraes Lic. Eng. Civ., Porto; Dip. Reg. Dev. Pl., M. Soc. Sc., ISS, the Hague.
Biplab Kanti Sengupta A. Arch., Calcutta; M.C.P., Kharagpur.
Lakshman A. Yapa B.A. (Hon.), Ceylon; Ph.D., Syracuse.

IEM

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Hoang Tuy Ph.D., Moscow.
S.K. Gupta B.A., Punjab; M.A., Delhi; Ph.D., IIT, Kanpur.

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SEC

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Yozo Fujino B.Eng., M.Eng., Tokyo; Ph.D., Waterloo.
R.L. Chauhan B.Eng., Jodhpur; M.Eng., Ph.D., Roorkee.

ELC

- Michael Smithies** B.A., M.A., Oxford; M.A., California.
Shirley Govindasamy B.S. (Ed.), Worcester College.

WRE

- Tsan-Wen Wang** B.S., M.S., National Taiwan; M.S., Colorado State; Ph.D., South Dakota.

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- Ex Professor Alastair M. North**
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Asian Institute of Technology
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Tufts University
U.S.A.
- Dr. Puey Ungphakorn**
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United Kingdom
- Secretary:
Emilie Katudat (Mrs.)
Asian Institute of Technology
- Notes:
○ Ex Officio Member
President, Vice President
for Academic Affairs,
the President of the
AIT Alumni Association
□ Life member
In all other cases, the
period of appointment
terminates in the year
shown in brackets,
normally after the
January Board meeting.
+ Elected from the Faculty
Ex Member of Executive
Committee
Pc Member of Policy and
Planning Committee
Sr Member of Student
Relations Committee
- As of December 1988

Balance Sheet as at June 30, 1986

ASSETS

	1986 Baht	1985 Baht
CURRENT FUNDS		
Unrestricted:		
Cash at banks	1,832,485	12,253,026
Investments, at cost	9,790,412	26,843,146
Advance duties and taxes (Note 2)	37,210,516	23,716,089
Other receivables	1,415,365	2,305,165
Deposits	249,093	240,172
Due from other funds		
- Loan Funds	28,375	28,375
- Endowment Funds	-	2,511,600
- Restricted Current Funds	276,304	-
Restricted:		
Cash at banks	2,930,261	3,579,272
Investments, at cost	29,240,982	20,408,210
Accounts receivable and accrued income	1,604,808	1,045,468
Due from other funds		
- Unrestricted Current Funds	-	3,497,612
- Agency Funds	180,000	2,108,425
Total Current Funds	<u>84,758,601</u>	<u>98,536,560</u>
LOAN FUNDS		
Cash at bank	24,675	13,491
Accounts receivable	3,700	14,884
Total Loan Funds	<u>28,375</u>	<u>28,375</u>
ENDOWMENT FUNDS		
Investments, at cost	33,307,419	31,193,072
Accrued income	39,508	153,303
Total Endowment Funds	<u>33,346,927</u>	<u>31,346,375</u>
GENERAL RESERVE		
Cash at banks	-	899,553
Investments, at cost	108,189,757	91,519,819
Accrued income	2,075,645	2,592,218
Total General Reserve	<u>110,265,402</u>	<u>95,011,590</u>

(with comparative totals as at June 30, 1985)

LIABILITIES AND FUND BALANCES

	1986 Baht	1985 Baht
CURRENT FUNDS		
Unrestricted:		
Accounts payable and accrued expenses	2,617,341	3,100,153
Deposits	386,100	345,600
Due to other funds		
– Restricted Current Funds	–	3,497,612
– Sponsored Program Funds	–	5,625
– Auxiliary Enterprise Funds	–	894,623
– Unexpended Plant Funds	–	200,837
– Agency Funds	–	161,978
Fund balances (Schedule 1)	47,799,109	59,691,145
Restricted:		
Accounts payable and accrued expenses	3,770,747	3,037,359
Due to other funds		
– Unrestricted Current Funds	276,304	–
– Sponsored Program Funds	–	500,000
Fund balances (Schedule 1)	29,909,000	27,101,628
Total Current Funds	<u>84,758,601</u>	<u>98,536,560</u>
LOAN FUNDS		
Due to other funds		
– Unrestricted Current Funds	28,375	28,375
Total Loan Funds	<u>28,375</u>	<u>28,375</u>
ENDOWMENT FUNDS		
Due to other funds		
– Unrestricted Current Funds	–	2,511,600
Fund balances (Schedule 1)	33,346,927	28,834,775
Total Endowment Funds	<u>33,346,927</u>	<u>31,346,375</u>
GENERAL RESERVE		
Due to other funds		
– Unexpended Plant Funds	1,000,000	–
Fund balances (Schedule 1)	109,265,402	95,011,590
Total General Reserve	<u>110,265,402</u>	<u>95,011,590</u>

ASSETS

PLANT FUNDS	1986 Baht	1985 Baht
Unexpended:		
Cash at banks	11,514,018	11,608,427
Investments, at cost	13,422,372	8,743,001
Accounts receivable and accrued income	49,850	27,851
Deposits	144,298	153,435
Due from other funds:		
- Unrestricted Current Funds	-	200,837
- General Reserve	1,000,000	-
Maintenance and Construction Reserve:		
Cash at banks	-	225,806
Investments, at cost	6,250,806	4,700,000
Due from other funds:		
- Unexpended Plant Funds	35,492	
Net investment in plant, at cost:		
Land development	14,217,038	13,229,823
Buildings	424,461,685	407,812,012
Furniture and equipment	404,813,789	341,342,191
Library acquisitions	42,324,313	37,912,729
Construction in progress	2,651,795	16,491,427
Total Plant Funds	<u>920,885,456</u>	<u>842,447,539</u>
AUXILIARY ENTERPRISE FUNDS		
Cash at banks	1,241,450	2,369,131
Investments, at cost	13,175,621	5,326,732
Accounts receivable and accrued income	1,273,568	1,048,164
Deposits	1,499,579	1,497,339
Inventories	1,772,707	2,312,006
Due from other funds:		
- Unrestricted Current Funds	-	894,623
Total Auxiliary Enterprise Funds	<u>18,962,925</u>	<u>13,447,995</u>
SPONSORED PROGRAM FUNDS		
Cash on hand and at banks	3,925,165	3,079,903
Investments, at cost	5,654,133	8,767,787
Accounts receivable	1,097,696	849,078
Due from other funds:		
- Unrestricted Current Funds	-	5,625
- Restricted Current Funds	-	500,000
- Agency Funds	540,000	864,905
Total Sponsored Program Funds	<u>11,216,994</u>	<u>14,067,298</u>
AGENCY FUNDS		
Cash at banks	2,157,032	4,326,287
Investments, at cost	30,989,258	15,363,047
Accounts receivable and accrued income	105,978	516,447
Due from other funds:		
- Unrestricted Current Funds	-	161,978
Total Agency Funds	<u>33,252,268</u>	<u>20,367,759</u>

LIABILITIES AND FUND BALANCES

PLANT FUNDS	1986 Baht	1985 Baht
Unexpended:		
Accounts payable and accrued expenses	125,662	53,000
Due to other funds		
— Maintenance and Construction Reserve	35,492	—
Fund balances		
— Unallocated	7,628,696	8,118,064
— Allocated	18,340,688	12,562,488
Maintenance and Construction Reserve:		
Fund balances (Schedule 1)	6,286,298	4,925,806
Net investment in plant, at cost:		
Fund balances (Schedule 1)		
— Allocated	888,468,620	816,788,181
Total Plant Funds	<u>920,885,456</u>	<u>842,447,539</u>
AUXILIARY ENTERPRISE FUNDS		
Accounts payable and accrued expenses	1,588,284	1,416,188
Deposits	48,318	30,800
Fund balances (Schedule 1)		
Auxiliary services — Unallocated	2,043,000	2,043,000
— Allocated	623,313	251,892
— Reserve	13,787,566	7,832,314
Academic related		
Continuing Education Center — Allocated	872,444	1,873,801
	<u>17,326,323</u>	<u>12,001,007</u>
Total Auxiliary Enterprise Funds	<u>18,962,925</u>	<u>13,447,995</u>
SPONSORED PROGRAM FUNDS		
Accounts payable and accrued expenses	69,511	5,701
Fund balances (Schedule 1)	11,147,483	14,061,597
Total Sponsored Program Funds	<u>11,216,994</u>	<u>14,067,298</u>
AGENCY FUNDS		
Accounts payable and accrued expenses	32,778	124,130
Due to other funds		
— Restricted Current Funds	180,000	2,108,425
— Sponsored Program Funds	540,000	864,905
Fund balances (Schedule 1)		
— Allocated	29,220,666	13,989,550
— Unallocated	3,278,824	3,280,749
	<u>32,499,490</u>	<u>17,270,299</u>
Total Agency Funds	<u>33,252,268</u>	<u>20,367,759</u>

Notes to the Financial Statements

1. Summary of significant accounting policies

a) Accrual basis: The financial statements of the Asian Institute of Technology have been prepared on the accrual basis except for depreciation accounting as explained in note 1(d) to the financial statements. The statement of current funds revenues and expenditures is a statement of financial activities of current funds related to the current reporting period. It does not purport to present the results of operations or the net income or loss for the period as would a statement of income.

b) Fund accounting: In order to ensure observance of limitations and restrictions placed on the use of the resources available to the Institute, the books of account of the Institute are maintained in accordance with the principles of "fund accounting". This is the procedure by which resources for various purposes are classified for accounting and reporting purposes into funds that are in accordance with activities or objects specified.

Within each fund group, fund balances that are restricted by outside sources are so indicated and are distinguished from unrestricted funds allocated to specific purposes by action of the governing board. Externally restricted funds may only be utilized in accordance with the purpose established by the source of such funds and are in contrast with unrestricted funds over which the governing board retains full control to use in achieving any of its institutional purposes.

Income derived from investments is accounted for as revenue in the unrestricted current funds, with the exception of general reserve and unexpended plant funds in which income is accounted for in the fund maintaining the investment.

All other unrestricted revenues are accounted for in the unrestricted current funds. Restricted gifts, grants, appropriations and other restricted resources are accounted for in the appropriate restricted funds.

c) Assets and liabilities in terms of foreign currency outstanding at balance sheet date are converted into Baht at the approximate bank rates ruling at that date. Gains or losses on exchange are taken up in the statement of changes in fund balances as and when incurred.

d) Physical plant and equipment are stated at cost at date of acquisition or fair value at date of donation in the case of gifts. Depreciation on physical plant and equipment is not recorded.

2. Advance duties and taxes

	1986 Baht	1985 Baht
Employee personal income taxes	28,782,516	12,337,720
Import duty and business tax on automobiles	2,459,237	6,586,797
Others	5,968,763	4,791,572
	<u>37,210,516</u>	<u>23,716,089</u>

The refund of the above advance from the Royal Thai Government will be subjected to annual Government budget.

3. Investments

At June 30, 1986, a fixed deposit of Baht 4.9 million (1985 - Baht 6.5 million) included in investments of General Reserve is pledged with a bank as collateral against outstanding letters of guarantee issued by the bank.

4. Commitments

At June 30, 1986 and 1985 the Institute had outstanding commitments of approximately Baht 9.3 and 17.8 million respectively in respect of contracts for construction in progress at that date but not completed and outstanding purchase orders.

ACCOUNTANTS' REPORT TO THE TRUSTEES OF THE ASIAN INSTITUTE OF TECHNOLOGY

We have examined the accompanying balance sheets of the Asian Institute of Technology as at June 30, 1986 and 1985 and the related statements of changes in fund balances and current funds revenues and expenditures for the years ended June 30, 1986 and 1985 in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the aforementioned financial statements present fairly the financial position of the Asian Institute of Technology as at June 30, 1986 and 1985 and the changes in fund balances and the current funds revenues and expenditures for the years ended June 30, 1986 and 1985 in conformity with generally accepted accounting principles consistently applied.

Price Waterhouse
Bangkok, Thailand
September 19, 1986

Financial Review

1. The balance sheet as certified by the Auditors has not been consolidated to show the overall AIT financial position. This can be done by eliminating all amounts owing to and from the funds to each other. This results in a total net asset and liability position of 1,202 million baht compared with 1,096 million baht at 30 June 1985 or an increase of 9.7%.
2. A brief description of the funds follows:
 - Unrestricted Current Funds are funds available for general operating purposes without restrictions imposed by outside agencies. This is the operating budget of AIT.
 - Restricted Current Funds are funds available subject to restrictions imposed either externally or internally, specifying the manner in which said funds are to be used in current operations.
 - Loan Funds are funds available for needy students to borrow for a short period.
 - Sponsored Program Funds are funds available subject to restrictions by donors or other agencies, as a condition of gifts, that they be used for research projects, conferences, seminars, short courses, or any other program.
 - Auxiliary Enterprise Funds are funds provided for operating auxiliary services, other campus services and academic related services, in support of academic divisions and/or administrative departments with a non-profit making purpose.
 - Endowment Funds are funds which donors or other agencies have stipulated, as a condition of gifts, that the principal is to be maintained inviolate and in perpetuity, with only the income from the investments of the fund being expended.
 - General Reserve is the fund which the Board of Trustees have stipulated shall be held in reserve for future use.
 - Unexpended Plant Funds are funds to be used for the acquisition of physical properties.
 - Maintenance and Construction Reserve was established in 1979 in order to provide funds for costs of maintenance and construction.
 - Agency Funds are funds held in trust by the Institute on behalf of donors and other agencies.

Portfolio of Completed and On-going Contract and Grant Research

COMPLETED

Implementing Division/Center Research Title	Sponsor	Principal Investigator (s)	Grant Obligation
AFE			
Use of Waste-Grown Tilapia as Fish Feed	Research Initiation Grant, AIT	Dr. Wee	US\$ 2,500
Buffalo/Fish and Duck/Fish Integrated Systems for Small Scale Farmers	ODA, UK	Prof. Edwards	57,376
Testing of Compac 340 Roller	Thai Agency Engineering Co., Ltd.	Dr. Gee-Clough, Mr. Agarwalla	2,423
EE			
Environmental Impact Study for Laem Chabang Port	Pacific Consultant International/A.R. Group Consulting Engineers, Thailand	Mrs. Samorn, Dr. Lohani	Baht 957,000
Air Pollution Inventory of Selected Industries Related to Lignite Use	Consultants Technology Co., Ltd., Thailand	Mrs. Samorn, Mr. Sompol, Dr. Lohani	220,000
ET			
Assessing Energy Resources and Needs in Developing Countries	EC	Dr. Dang Van Giap	US\$ 287,325
Valorization of Biomass in Asia	EC	Dr. Bhattacharya, Mr. Shah	200,951
Research on Utilization of Alternative Fuels in Internal Combustion Engines	GTZ	Dr. Stahl	81,000
Development of Multi-fuel Intermittent Ice Making Machine Appropriate for Remote Rural Areas	AFME	Dr. Reddy	18,045
Use of Utilizability Methods to Analyze Solar Radiation Data	AFME	Dr. Reddy	10,000
Gasification and Combustion of Biomass Residues	AFME	Dr. Bhattacharya, Mr. Shah	16,210
Food/Energy Nexus	Research Initiation Grant, AIT	Dr. Codoni	2,528
HSD			
Development of a Microcomputer System for District/Division Level Planning	NORAD (Sri Lanka) through RRDC	Prof. Dias, Dr. Yapa	US\$ 11,500
Low-rise/High-density Housing Patterns Based on the Chinese Shophouse System	GTZ	Mr. Kammeier	5,000
Land Consolidation for Urban Development in Indonesia	Harvard Institute for International Development	Mr. Archer	3,500

Implementing Division/Center Research Title	Sponsor	Principal Investigator (s)	Grant Obligation
Microcomputer Software for Rural Center Development Stage I (Stages I, II)	(I) GTZ (II) ISS/AIT	Mr. Kammeier	US\$ 2,500
Applied Nutrition for Rural Development Phase I (Sept 1984 – Aug 1986)	EC	Dr. Tips, Dr. Jindal (AFE)	105,000
Applied Nutrition for Rural Development Phase II (Sept – Dec 1986)	EC	Dr. Tips	16,200
Role of Women in Slum Improvement	AIT/CIDA/HSD	Prof. Weber	1,700
Small Farm Development Issues in Northeast Thailand: Toward Appraising Small Farm Potential for Agricultural Development	CIDA/HSD	Prof. Weber	2,308
Building Productive Rural Communities: A Strategy for Settlement Planning and Development after Land Reform	CIDA	Prof. Weber	12,675
Development of a Regional Data-base for Hambantota District in Sri Lanka	NORAD	Dr. Yapa, Prof. Dias	10,000

SEC

Feasibility Study of Asian Software for Microcomputer Applications in Civil Engineering	Research Initiation Grant, AIT	Dr. Worsak	Baht 66,250
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WRE

Integrated Flood Relief Plan of the West Bank	BMA	Dr. Tawatchai Prof. Suphat	US\$ 293,470
Control of Waste Disposal from Offshore Tin Mining, Phase I	DMR	Mr. Prida, Prof. Suphat	313,503
Modelling of Water Resources Development of the Mananga Basin, Cebu City, Philippines	Danish Hydraulic Institute	Dr. Dyhr-Nielsen	9,573
Sediment Control of Mae Kum Luang Project	National Energy Administration, Thailand	Mr. Prida	38,695
Hydraulic Model Study of Kaeng Krung Dam Spillway, Kaeng Krung Project, Thailand	EGAT	Mr. Prida	35,079

ARRSTC

Soil, Land Use and Soil Conservation in People's Irrigation Systems in Northern Thailand	Team Consulting Engineers Co., Ltd.	Dr. Apisit	Baht 80,000
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IN PROGRESS

Implementing Division/Center Research Title	Sponsor	Principal Investigator (s)	Grant Obligation
AFE			
Fish Production with Composted Water Hyacinth	GTZ	Prof. Edwards	US\$ 53,262
Resource Recovery and Health Aspects of Sanitation	EC	Prof. Edwards, Dr. Wee, Dr. Chongrak (EE)	159,741
Effect of Rainfall, Soil, and Land Use on Soil Erosion in Solo Watershed, Java	DANIDA	Dr. Jensen	6,051
Soil Bin Operation	Thai Agency Engineering Co., Ltd.	Dr. Gee-Clough	1,321
Evaluation, Improvement and Demonstration of a Manual Soybean Seeder	IDRC	Prof. Singh, Dr. Gee-Clough	146,000
Heat Sterilization and Accelerated Drying of High Moisture Rice for Safe Storage	USAID (Thailand)	Dr. Jindal	150,000
EEC Tilapia Project	EC	Prof. Edwards	47,667
Applied Nutrition for Rural Development	EC	Dr. Jindal, Dr. Tips (HSD)	66,299
Improving the Tractive Performance of Wheeled Tractors in Wet Paddy Fields	EC	Dr. Gee-Clough	58,590
Application of Chemicals at the Farm Level in the Control of Aflatoxin in Stored Maize Cobs	Rural Investment Overseas Ltd., UK	Dr. Ilangantileke	4,846
Prawn Hatchery Project	Institute of Agricultural Engineering, Netherlands	Dr. Wee	5,060
Case Study on the Economic and Technical Options of Integrated Urban Sanitation and Recycling Systems	GTZ	Prof. Edwards, Dr. Chongrak (EE), Dr. Orth (EE), Mr. Kammeier (HSD)	18,285
Effect of Dietary Protein Level on Growth of Seabass Reared in Freshwater	Research Initiation Grant, AIT	Dr. Wee	2,500
Effect of Stocking Density on Growth of Seabass Reared in Freshwater	Research Initiation Grant, AIT	Dr. Wee	2,500
CS			
A Thai CAI for Teaching Arithmetics in Prathomsuksa 6	Ministry of Education, Thailand	Dr. Kanchit	US\$ 8,700
Development of a Computerized Primary Health Care MIS	Ministry of Public Health, Thailand	Ms. Kanchana	25,920

Implementing Division/Center Research Title	Sponsor	Principal Investigator (s)	Grant Obligation
EE			
Palm Oil Effluent Management in Thailand	UNDP/FAO	Mrs. Samorn, Dr. Shin, Dr. Vigneswaran	Baht 170,000
Wastewater Treatment Technology in Tropical Regions	JICA	Dr. Hanaki	200,000
Establishment of Design Recommendations for Health Projection Measures for Intermittent Water Supply Schemes	WHO/Provincial Waterworks Authority, Thailand	Dr. Vigneswaran, Dr. Chongrak	94,000
Factors Affecting the Applicability of Water Hyacinth Systems for Wastewater Treatment in Southeast Asia	GTZ	Dr. Orth	DM 50,000
Effect of Deforestation and Agricultural Land Use on the Nutrient Level and Suspended Solids Load of Tropical Streams	EC	Dr. Orth, Dr. Borel (ARRSTC)	Baht 668,000
Decentralized Chemical Treatment of Industrial Wastewater in Developing Countries with Locally Available Chemicals	BMFT/AIT	Dr. Orth	DM 50,000
Wastewater Treatment with Aquatic Microphytes	GTZ	Dr. Orth	DM 234,000
ET			
Theoretical and Experimental Studies of Solar Ponds and their Application	AFME/EGAT	Dr. Reddy, Mr. Jumba	US\$ 8,542 11,446
Field Trial Procedures to Assess the Behavior of Photovoltaic Modules under Natural Conditions	AFME	Dr. Lasnier, Mr. Ang	15,902
Field Trial Procedures to Assess the Behavior of Photovoltaic Refrigerators under Natural Condition of Operation	AFME	Dr. Lasnier, Mr. Ang	13,623
Assistance in Strengthening Overall Energy Planning and Policy Analysis Capability and Master Plan	UNDP/ESCAP/EC	Dr. Lucas, Dr. Codoni, Dr. Dang Van Giap	313,392 48,860
Project on Biogas Plant	GTZ	Mr. Tentscher	100,000
Solar Water Heater Characterization and Testing Method	AFME	Dr. Reddy, Mr. Supachart	20,563
Improvement of the Dynamic Method of Testing to Determine Solar Thermal Collector Performance	AFME	Mr. Supachart	20,563
Characterization of Rural Energy Uses	EC	Dr. Dan Van Giap, Mr. Acosta	58,100
Energy Demand Analysis of the Residential and Tertiary Sector in Southeast Asian Countries	AFME	Mr. Meraud	15,190

Implementing Division/Center Research Title	Sponsor	Principal Investigator (s)	Grant Obligation
AIT-ESCAP Photovoltaic Project in Indonesia	ESCAP	Dr. Lasnier, Mr. Ang	US\$ 42,120
Suan-Som Village Photovoltaic Project	A.M.I. SYSTEMS	Dr. Lasnier, Mr. Bouix	2,000
Solar Powered Desiccant Refrigerator	IIT, USA	Prof. Exell, Dr. Bhattacharya	49,172
Energy Diagnosis and Demand Forecasting for Capiz Province, Philippines	EC	Dr. Dang Van Giap, Mr. Acosta	18,000
Energy Demand Analysis and Forecasting for Thailand – Phase 1	EC	Dr. Dang Van Giap, Dr. Sauter-Servaes	283,114
Direct Heat Gasifier for Drying Maize: Design, Development, Pilot Testing and Monitoring	Smith International Co., Thailand	Dr. Bhattacharya, Mr. Shah	9,590
Biocoal: Pyrolysis of Agroforestry, Agricultural and Processing Residues	GTZ	Dr. Bhattacharya, Dr. Reines, Dr. Lucas	116,644
Evaluation and Performance Testing of Biomass Gasifier	GTZ	Dr. Reines	111,680
Testing of Energy Equipment for Adaptation to Tropical Climate	AFME	Mr. Bouix, Dr. Mohanty	57,000
AIT-ESCAP Photovoltaic Project in Pakistan	ESCAP	Dr. Lasnier, Mr. Ang	24,272

GTE

Impact of Quaternary Geology on Urban Development and Land Use in the Central Plain of Thailand	IDRC	Prof. Prinya, Prof. Yong	Baht 1,900,260
Comparative Study of the Stability of AIT Embankment with and without Granular Piles	Research Initiation Grant, AIT	Dr. Bergado	65,000
Modal Change Effect by New Transport	JICA	Dr. Murata	63,000
Foundation Investigations and Remedial Measures for Three Historical Sites in Lopburi Province, Thailand (Phase III)	Fine Arts Department, Thailand	Dr. Bergado, Dr. Towhata, Dr. Whiteley	350,000
Numerical Prediction of Differential Ground Surface Motion during Earthquake Liquefaction	Association for the Development of Earth- quake Prediction, Japan	Dr. Towhata	184,800
Soil Dynamics Study of Soils in Thailand	JICA	Dr. Towhata	65,000
Survey Method for Transportation Planning in Developing Countries	JICA	Dr. Miyamoto *	100,000

Implementing Division/Center Research Title	Sponsor	Principal Investigator (s)	Grant Obligation
HSD			
International Collaborative Research Project on "Decentralization: Area Development in Practice in Asia"	FAO and AIT/ISS	Dr. Demaine	US\$ 16,000
Location of Service and Non-farm Economic Activities in Katuwana AGA Division, Hambantota District, Sri Lanka	AIT/ISS	Prof. Dias	10,000
Rural Housing and Government Building Reconstruction Program for Capiz Province, Philippines	Capiz Foundation, Philippines	Dr. Etherington	4,800
Appropriate Urban Sanitation Systems, Case Study of Chonburi	GTZ	Mr. Kammeier	38,000
Rural Industrialization in Khon Kaen Province, Thailand	AIT/ISS	Dr. Sibbing	2,750
Belgian Low Cost Housing Project (Oct 1986 – Sept 1988)	Belgian Government/ Flemish Inter-university Council	Dr. Tips, Dr. Etherington	370,000
Thai-German Plant Protection Field Research Supervision	TG-PPP/MAAC-DAE/GTZ	Prof. Weber	600
Development of an Alternative Strategy for Land Settlement Planning in Asian Countries	GTZ	Prof. Weber	8,300
Evaluation of Income-Generating Projects of Foster Parents Plan International in Selected Asian and African Countries	Foster Parents Plan International/USAID	Prof. Weber, Mr. Abeyrama	11,840
Study of Non-Farm Sector in Southern Sri Lanka	ISS, Netherlands	Dr. Yapa, Prof. Dias	10,000
IEM			
Thailand Economic Futures	Research Initiation Grant, AIT	Dr. Van Frausum	Baht 60,000
WRE			
Efficient Use of Rainfall for Supplementary Irrigated Lowland Rice, Phase II	GTZ/GmbH	Dr. Christoph	Baht 167,841
Hydraulic Model Study of Lower Mae Ping Project for Lower Mae Ping Barrage Scheme and Mae Wang Diversion Scheme, Thailand	EGAT	Dr. Twatchai, Mr. Prida	US\$ 59,303
Physical Model and Mathematical Model of Heat Diffusion from Khanom Thermal Power Plant, Thailand	Team Consulting Engineers Co., Ltd.	Mr. Prida, Prof. Suphat	Baht 1,800,000

Implementing Division/Center Research Title	Sponsor	Principal Investigator (s)	Grant Obligation
A Two-Dimensional Modelling of Thonburi and Samut Prakan West	Netherlands Engineering Consultant Co.	Prof. Suphat	Baht 502,500
Extended Simulation Study of Bangkok Aquifer System	DMR	Dr. Das Gupta	149,624
Improvement of Tanker Approach at Khanom Power Plant, Thailand	EGAT	Mr. Prida, Prof. Suphat	639,000
Hydraulic Model Testing, Mae Taeng Hydropower Project, Thailand	Norconsult A.S., Norway	Mr. Prida	772,765
Ao Phai Thermal Power Plant Thermal Discharge Model Tests, Thailand	Burns and Roe Company, USA	Prof. Suphat, Mr. Prida	1,377,200

ARRSTC

Surface Water Evaluation in Northeast Thailand: A Pilot Project Using Satellite Remote Sensing	NESDB	Dr. Atwell, Dr. Kaew	Baht 7,000,000
A Comparative Thematic Mapping Analysis of SPOT Data in the Vientiane Plain	Mekong Secretariat/ CNES	Dr. Borel	US\$ 30,000
A Preliminary Study on Soil Geomorphological Mapping by Remote Sensing Techniques	Research Initiation Grant, AIT	Dr. Apisit	Baht 25,250.43
Geomorphologic Units Appearing on Remote Sensing Imagery in Thailand	NRC, Thailand	Dr. Apisit	225,800

ELC

Computer-Assisted Language Learning	Research Initiation Grant, AIT	Mr. Storer	Baht 66,250
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RCC

Design of a Computerized Data Analysis System for SEWS-Data, Thailand	TG-PPP/DOAE	Mr. Gonzales, Mr. Dias	US\$ 85,100
Computer System for Monitoring Child Survival Programs in Bangladesh and Indonesia	HKI/IBM	Ms. Hadfield	35,000

Continuing Education Center 1986 Program

Date	Title	Co-Organizers/ Sponsors	No. of Participants
WORKSHOPS			
6 – 17 Jan	Microcomputer Applications to the Epidemiology of Acute Respiratory Infections	BOSTID/MJ/CS	19
17 – 21 Feb	Faculty Professional Development	AIT Faculty Committee	20
14 – 16 July	CEC Organizational Development	CEC	8
TRAINING COURSES			
3 – 21 Mar	Rural Road Construction and Maintenance	USAID/BG/WSA/GTE	16
3 Mar – 26 Apr	Small Scale Water Control Structures	CIDA/BG/NHC/WRE/GTE	14
3 Apr – 30 May	Watershed Management for Citanduy II Project	USAID/IG/RMI/HSD/ CS/ARRSTC	9
30 June – 26 July	Computer-Assisted Regional Planning	NORAD/SLG/HSD	9
25 July – 4 Sept	Low Cost Building Materials	WB/SLG/SEC	2
15 Sept – 18 Oct	Project Management	ADV/IEM	11
15 Sept – 10 Oct	Industrial Project Preparation, Evaluation and Financing	UNIDO/IEM	20
15 Sept – 11 Dec	Urban Drainage and Flood Control	OECF/IG/WRE/ CS/SEC/IEM	21
22 Sept – 1 Nov	On-Farm Water Management	ADV/JIDP/WRE/AFE/ ARRSTC/CS	8
27 Oct – 17 Dec	Planning and Design of Small Scale Water Resource Development Projects	ADB/BG/WRE/GTE/ JIDP/ARRSTC/CS/IEM	12
3 – 10 Nov	Biomass Energy Technology	USAID/NG/ET	5
3 – 28 Nov	Environmental Impact Assessment and Review	ADV	18
3 Nov – 27 Dec	Small Scale Water Control Structures	CIDA/BG/NHC/WRE/GTE/JIDP	16
2 – 20 Dec	Managing Rural Development	ADV/HSD	20
8 – 19 Dec	First Asian School: Computer Science	ADV/UNESCO/COSTED/UNDP/CS	25
SEMINARS			
24 July	Pedagogical Issues Relating to Computer Use in Education	CS	30
11 Sept	Application of Membrane Separation Technology to Water and Wastewater Treatment	ADV/EE	17
12 Sept	Electronic Directory Systems for Communications Network	CS	30
23 Sept	Lake Quality and Management	NEB/EE	70
3 Oct	Behavior of Deep Bed Filters	EE	30
10 Nov	Urban Drainage Model Mouse	DHI	30
12 Nov	Concrete Technology	ADV/ACI/SEC	25
INTERNATIONAL CONFERENCE			
12 – 19 Oct	Research, Consulting and Extension Services in Asian Universities	GTZ/DAAD/AIT FACULTY COMMITTEE	110

Abbreviations

ADB	Asian Development Bank
ADV	Advertized course (no single sponsor)
AITF	AIT Foundation, Inc.
AFME	French Agency for Energy Management
AITAA	AIT Alumni Association
ASEAN	Association of Southeast Asian Nations
ACI	American Concrete Institute (Singapore)
BG	Bangladesh Government
BMA	Bangkok Metropolitan Administration
BMFT	Bundesministerium fuer Forschung und Technologie , FRG
BOSTID	Board of Science and Technology for International Development, USA
CDG	Carl Duisberg Gesellschaft e.V. Germany
CEFIGRE	Centre de Formation Internationale a la Gestion des Ressources en Eau
CIDA	Canadian International Development Agency
CNES	Centre National D'Etudes Spatiales
COSTED	Committee of Science and Technology in Developing Countries
DAAD	German Academic Exchange Service
DANIDA	Danish International Development Agency
DHI	Danish Hydraulic Institute
DOAE	Department of Agricultural Extension, Thailand
DMR	Department of Mineral Resources, Thailand
DSE	Deutsche Stiftung fur Internationale Entwicklung
DTEC	Department of Technical and Economic Cooperation, Thailand
EC	European Community
EGAT	Electricity Generating Authority of Thailand
ESCAP	Economic and Social Commission for Asia and the Pacific
FAO	Food and Agriculture Organization
GTZ	German Agency for Technical Cooperation
HKI	Helen Keller Institute
IBM	International Business Machines
IDRC	International Development Research Center, Canada
IG	Indian Government
IIT	Illinois Institute of Technology, USA
IPS	Institute of Population Studies, Chulalongkorn University
ISS	Institute of Social Studies, the Netherlands
JICA	Japan International Cooperation Agency
KEIDANREN	Federation of Economic Organizations of Japan
NEB	National Environment Board, Thailand
NG	Nepalese Government
NHC	Northwest Hydraulic Consultants
NORAD	Norwegian Agency for International Development
NRC	National Research Council of Thailand
ODA	Overseas Development Administration, UK
OECF	Overseas Economic Cooperation Fund
RMI	Resource Management International
SLG	Sri Lankan Government
TG-PPP	Thai-German Plant Protection Program
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
WB	World Bank
WHO	World Health Organization
WSA	Wilbur Smith Associates

Academic Divisions

AFE	Division of Agricultural and Food Engineering
CS	Division of Computer Science
EE	Division of Environmental Engineering
ET	Division of Energy Technology
GTE	Division of Geotechnical and Transportation Engineering
HSD	Division of Human Settlements Development
IEM	Division of Industrial Engineering and Management
SEC	Division of Structural Engineering and Construction
WRE	Division of Water Resources Engineering

Centers and other offices

ADPC	Asian Disaster Preparedness Center
ADPU	Administrative Data Processing Unit
ARRSTC	Asian Regional Remote Sensing Training Center
ELC	English Language Center
LRDC	Library and Regional Documentation Center
AGE	Asian Information Center for Geotechnical Engineering
ENSIC	Environmental Sanitation Information Center
IFIC	International Ferroement Information Center
RERIC	Renewable Energy Resources Information Center
RCC	Regional Computer Center
PCAD	Programs in Computer Applications Development
JIDP	Joint Irrigation and Drainage Program

