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The aerospace industry in Thailand

: May 1990. --

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Based on the above, the product line of the aerospace industry is a very broad one, because each of the primary products, such as flight vehicles, requires hundreds, thousands or in a few cases millions of systems, sub-systems, components and individual parts.

Except for the production of aircraft tyres, there is no known commercial production of goods linked to the aerospace industry in Thailand. Almost all the products and parts in the aerospace sector are imported from abroad.

Because there are numerous aerospace products depending on the definition utilized, it is not possible to cover a significant number of them. Furthermore, statistics and information of such products are not readily available in Thailand.

It is also an observation that the range of aerospace products in Thailand is likely to be limited due to the restrictions placed on the private sector.

The scope of the study will therefore concentrate on only a limited number of major products in the aviation sector. The focus will be on aircraft in addition to other indirect information which will help to indicate the size and growth of the aviation sector in Thailand.

In fact, the use of indirect information and statistics may be a better approach considering the various weaknesses of the product approach.

Firstly, aerospace products are not homogeneous as in the case of commodities. There are large differences in the product of each manufacturer. It is therefore not appropriate to simply measure market size for such products by adding up their numbers.

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SECTION 1.0 : THE AEROSPACE SECTOR IN THAILAND

1.1 Scope of the Aerospace Sector

According to the New Encyclopaedia Britannica, the aerospace industry is the complex of manufacturing concerns engaged in the production of flight vehicles, including unpowered gliders and sailplanes, lighter-than-air craft, ground effect machines, heavier-than-air craft of both fixed-wing and rotary-wing varieties, space-launch vehicles, and manned or unmanned spacecraft; propulsion systems and other thrusting devices; on-board equipment essential to the design purpose of the flight vehicle; and ground-based support equipment needed for the operation and maintenance of the flight vehicles.

Based on the above, the product line of the aerospace industry is a very broad one, because each of the primary products, such as flight vehicles, requires hundreds, thousands or in a few cases millions of systems, sub-systems, components and individual parts.

Except for the production of aircraft tyres, there is no known commercial production of goods linked to the aerospace industry in Thailand. Almost all the products and parts in the aerospace sector are imported from abroad.

Because there are numerous aerospace products depending on the definition utilized, it is not possible to cover a significant number of them. Furthermore, statistics and information of such products are not readily available in Thailand.

It is also an observation that the range of aerospace products in Thailand is likely to be limited due to the restrictions placed on the private sector.

The scope of the study will therefore concentrate on only a limited number of major products in the aviation sector. The focus will be on aircraft in addition to other indirect information which will help to indicate the size and growth of the aviation sector in Thailand.

In fact, the use of indirect information and statistics may be a better approach considering the various weaknesses of the product approach.

Firstly, aerospace products are not homogeneous as in the case of commodities. There are large differences in the product of each manufacturer. It is therefore not appropriate to simply measure market size for such products by adding up their numbers.

Secondly, aerospace products are generally large, expensive and complicated capital investments which last many years when properly maintained. It is therefore not possible to measure demand for their service by the number of products sold as this would tend to fluctuate a lot from year to year.

Thirdly, technology in this area is changing very rapidly rendering a short life span for products.

Fourthly, product information and statistics are not readily available and are difficult to obtain.

In addition to the above, the study will not cover the aerospace sector which is linked to military and police activities because of its sensitive nature in terms of national security.

1.2 Historical Development in the Sector

Civil aviation in Thailand started after World War I when war surplus aircraft were adapted for transport of mail, and later passengers. In 1919 Thailand ratified the International Convention for Air Navigation marking the first step taken by Thailand to observe international regulations in civil aviation. The Minister of Defence at the time proposed the draft of the Air Navigation Act BE 2465 to the King who approved and proclaimed the Act effective from 26 August 1922 onwards.

As more and more international airlines flew into Thailand, civil air transport grew progressively. An airline called "The Aerial Transport of Siam Co Ltd" was established in May 1932 and granted a 25 year air transport concession.

Prior to the establishment of this airline, there was a government agency established in 1929 called "Air Transport Division" under the Office of the Secretary, Ministry of Economic Affairs, which later was transferred to the Department of Transport under the Ministry of Communications and renamed "Air Transport Division" in 1941.

After World War II, Thailand, represented by MR Seni Pramoj, signed the Convention on International Civil Aviation or better known as "the Chicago Convention" on 7 December 1944.

In 1947, the first Thai airline was transferred from the Royal Thai Air Force to the Ministry of Communications which reestablished it as "Siamese Airways Co Ltd" (SAC) on March 1.

A year later the Air Transport Division was upgraded as the "Civil Aviation Bureau" under the Ministry of Communications.

In 1948, the government granted approval to the establishment of the "Aeronautical Radio of Thailand Co Ltd" (AEROTHAI) to operate international telecommunications and air traffic control. This company later became a government enterprise as its functions were considered vital to national security. The airlines supporting the establishment of AEROTHAI were, however, allowed to hold minority shares.

In 1959, "Thai Airways International Co Ltd" was established under an agreement between Thai Airways Co Ltd (TAC), formerly "SAC", and the Scandinavian Airlines System (SAS) in order to operate international routes.

In 1963, the Civil Aviation Bureau was upgraded to the "Department of Aviation". In addition to dealing with international civil aviation matters, the Department also oversees the development of all airports in the country.

In order to develop and operate international airports in Thailand, the "Airports Authority of Thailand" was established in 1979 to take over the functions previously under the Aviation Department. This organization presently owns and operates Bangkok International Airport and all other of international airports in the country.

1.3 Market Size and Growth

Thai air transport traffic volume as compared to those of other countries in Asia and the Pacific Region since 1980 ranked fourth in terms of the number of passengers and sixth in terms of the volume of cargo. Thailand has benefited from its geographical location which has made her one of the region's major centre of civil aviation. This status of being an aviation hub has been maintained to the present, evidenced by the unceasing growth of both domestic and international civil aviation in the country.

The year 1989 witnessed 57 airlines operating regular scheduled services of over 1,200 flights per week linking Thailand with the world's principal cities. The country now has bilateral air agreements with 62 countries encompassing 5 continents as shown in Appendix A.

With Thailand entering the fast growth phase, the demand for air transportation is picking up rapidly as shown by the aircraft movements based on the number of flights with rights to pass through the country's international airports in Table 1.1.

TABLE 1.1

AIRCRAFT MOVEMENTS AT THAILAND'S INTERNATIONAL AIRPORTS

Unit : Flights

Year	Bangkok	Chiang Mai	Phuket	Hat Yai	Total	% Growth
1979	52,263	5,240	3,187	3,628	64,318	N.A.
1980	54,088	5,202	3,114	4,538	66,942	4.1
1981	51,330	5,749	3,516	5,142	65,737	-1.8
1982	52,456	7,159	3,776	5,156	68,547	4.3
1983	54,472	7,768	4,251	5,563	72,054	5.1
1984	55,553	8,862	5,357	6,353	76,125	5.6
1985	56,448	9,425	5,885	6,761	78,519	3.1
1986	62,712	8,244	6,382	6,375	83,713	6.6
1987	67,410	9,051	7,767	5,239	89,467	6.9
1988	78,345	8,946	9,401	5,225	101,917	13.9

Note : Including non-scheduled flight

Source: Department of Aviation

In fact, the increased number of flights has not caught up with actual demand as it is known that there is now insufficient flight capacity to handle the traffic coming into and out of the country. This is shown very clearly by the very significant jump in the number of passengers moving through various airports in the past few years shown in Table 1.2.

TABLE 1.2

PASSENGER MOVEMENTS AT THAILAND'S INTERNATIONAL AIRPORTS

Unit : 1,000 Persons

Year	Bangkok	Chiang Mai	Phuket	Hat Yai	Total	% Growth
1979	4,056	246	118	171	4,591	N.A.
1980	4,590	282	143	202	5,217	13.6
1981	5,012	311	160	241	5,724	9.7
1982	5,376	374	184	265	6,199	8.3
1983	5,670	417	227	297	6,611	6.6
1984	6,123	492	336	355	7,306	10.5
1985	6,535	554	385	364	7,838	7.3
1986	7,170	623	520	350	8,663	10.5
1987	8,673	777	764	363	10,577	22.1
1988	10,552	916	1,006	390	12,864	21.6

Note : Including both arriving and departing passengers and air crews, but excluding transit passengers.

Source: Department of Aviation

This has also been true of freight movements at various airports in Thailand as shown in Table 1.3.

TABLE 1.3

FREIGHT MOVEMENTS AT THAILAND'S INTERNATIONAL AIRPORTS

Unit : Tons

Year	Bangkok	Chiang Mai	Phuket	Hat Yai	Total	% Growth
1979	92,942	434	174	392	93,942	N.A.
1980	112,256	619	212	593	113,680	21.0
1981	115,347	854	204	510	116,915	2.8
1982	118,448	1,137	248	547	120,380	3.0
1983	121,704	1,333	520	809	124,366	3.3
1984	143,654	1,550	626	1,252	147,082	18.3
1985	162,326	1,870	724	1,263	166,183	13.0
1986	199,021	2,725	899	1,187	203,832	22.7
1987	241,256	2,476	1,429	2,099	247,260	21.3
1988	299,357	3,636	3,381	3,852	310,226	25.5

Note : Including both inbound and outbound freight, but excluding freight in transit.

Source: Department of Aviation

The significant increase in both passenger and freight traffic is due to a number of reasons.

Firstly, Thailand's export is rising rapidly due to a shift from import substitution industries to export industries which is leading to a substantial increase in export traffic volume.

Secondly, Thailand is becoming a major exporter of perishable agricultural products such as fresh fruits and vegetables.

Thirdly, increasing interest in Thailand by foreign investors has led to increasing contacts between Thai and foreign businessmen.

Fourthly, Thailand is becoming a major foreign tourist destination.

Fifthly, Thailand's increasing income level has resulted in an increasing interest by the local population to travel both abroad and at home. In fact, the statistics below in Table 1.4 show very clearly that domestic traffic whether in

terms of passenger or freight volumes have risen faster domestically than internationally as evidenced by the rising shares of domestic traffic. Nevertheless, the lower growth of international traffic could be due to the control on the number of flights based on bilateral agreements with other countries.

TABLE 1.4

SHARE OF DOMESTIC TRAFFIC AT THAILAND'S INTERNATIONAL AIRPORTS

Unit : Percent of Total

Year	Aircraft	Passenger	Freight	Mail
1979	14	7	1	8
1980	12	8	1	8
1981	14	8	1	8
1982	14	9	1	7
1983	18	10	1	10
1984	20	12	1	10
1985	21	14	2	12
1986	21	15	2	7
1987	20	17	1	4
1988	20	17	2	4
1989	22	19	2	5

Source: Airports Authority of Thailand

Sixthly, industries are starting to be developed at a fast pace in other regions outside of Greater Bangkok. This would lead to a greater demand for transportation between different regions.

(a) Bangkok International Airport

The year 1988 witnessed a substantial increase in international scheduled flights, international non-scheduled flights as well as domestic flights. Four airlines inaugurated their scheduled services to Bangkok International Airport while a number increased their flight frequencies. This increased the number of airlines using the airport to 50. The number rose further to 57 airlines in 1989.

The most densely trafficked routes can be ranked as Bangkok-Hong Kong, Bangkok-Singapore and Bangkok-Tokyo, respectively.

The increase in aircraft movement, passenger movements and cargo movements in 1988 were the highest in the past ten years (see Tables 1.1-1.3). Aircraft movements increased by 16.22% from 67,410 flights in 1987 to 78,345 flights in 1988 (55,953 international scheduled flights, 5,106 non-scheduled flights and 17,286 domestic flights).

Passenger movements increased by 21.66% from 8.67 million persons in 1987 to 10.55 million persons in 1988. Scheduled international passengers totalled 8.32 million persons or 78.82% of the overall number of passenger using the airport. The number of non-scheduled passenger was 0.12 million persons or 1.15% of the total. Domestic passengers of 2.11 million persons made up the rest or 20.03% of the total.

Cargo movements increased by 24.08% from 241,256 tons in 1987 to 299,357 tons in 1988. Most of the cargo or about 92.97% were carried by international scheduled flights.

(b) Chiang Mai Airport

During 1988, three airlines operated scheduled services to Chiang Mai, namely, Thai Airways, Thai Airways International and Dragonair. In April, Thai Airways was merged into Thai Airways International and in September 1988 Dragonair suspended its services. Thereafter, only one airline operated flight services to this airport.

In 1988, wide-bodied aircraft, such as Airbus, were used for the 37 weekly flights to and from Bangkok while Shorts were used for other domestic routes with about 44 flights a week. At present, there are 84 weekly flights between Bangkok and Chiang Mai.

In addition to the scheduled flights, there are a couple of small domestic airlines which operate unscheduled flight services to Chiang Mai - Thai Flying Co Ltd and Bangkok Airways Co Ltd.

Chiang Mai used to be the country's second most important airport until 1988 when the tourism boom in Phuket resulted in Phuket Airport overtaking Chiang Mai Airport in terms of the number of flights and passengers (see Table 1.1-1.2). However, Chiang Mai Airport is still ahead of Phuket in terms of freight volume (see Table 1.3).

(c) Phuket Airport

In 1988, Phuket experienced the highest number of aircraft and passenger movements among all of the regional airports, but cargo volume ranked third, superseded by Hat Yai and Chiang Mai (see Tables 1.1-1.3). This is because of its popularity mainly as a tourist destination for both local and foreign visitors and not as a major industrial center.

Besides Thai Airways International which operates 70 weekly flights between Bangkok-Phuket, there are three other airlines operating scheduled flight services to Phuket - Dragonair which operates 3 weekly flights from Hong Kong, Trade Wings which operates 7 weekly flights from Singapore and Malaysian Airline which operates 3 weekly flights from Kuala Lumpur.

There are also non-scheduled flights to Phuket, such as Lauda Air, Condor and Singapore Airlines.

(d) Hat Yai Airport

In 1988, Thai Airways International operated 21 weekly Airbus and B737 flights between Bangkok and Hat Yai, 7 weekly flights through Hat Yai to Kuala Lumpur and Singapore, and 13 weekly Shorts flights within the region; Malaysian Airline System operated 7 weekly B737 flights; and Singapore Airlines operated non-scheduled flights to this airport from time to time.

At present, Thai Airways International has raised the number of weekly flights between Bangkok-Hat Yai to 70.

Passenger traffic at this airport ranked third among the regional airports, but cargo traffic ranked second after Chiang Mai (see Tables 1.2-1.3). Most of the cargo carried are fishery products.

There are also non-scheduled flight operations to Hat Yai Airport by Singapore Airlines, Flightways and Thai Flying.

1.4 Major Aerospace Products

Although all major aerospace products are imported and import statistics are available from the Customs Department, it is not possible to measure the volume of such products as the statistics are incomplete. They do not include products which have been imported with financial assistance from foreign governments. They also do not include Thai Airways International's aircraft purchase and all purchases made by the military and police.

Notwithstanding the above, import statistics of aircraft in Table 1.5 below do not show any increase in volume, although the value of such imports have increased.

TABLE 1.5
IMPORT OF ENGINE-POWERED AIRCRAFT

Year	Aeroplanes		Helicopters	
	Unit	Million Baht	Unit	Million Baht
1970-74	32	1,656	4	24
1975-79	18	3,213	7	29
1980-84	17	8,441	6	68
1985-88	19	16,977	6	47

Source: See Table B-1 in Appendix B
(See Tables B-1 to B-24 in Appendix B for additional details)

Nevertheless, because civilian aircraft, except those of the Ministry of Agriculture and Cooperatives, must be registered with the Department of Aviation, the number and type of existing aircraft can be obtained from this source. There are in total 110 aircraft registered at the Department of Aviation at the end of March 1990 which can be broken down as follows:

- Civil Aviation Training Centre of Thailand 20 aircraft
- Department of Aviation 2 aircraft
- Electricity Generating Authority of Thailand 4 aircraft
- Institute of Technology and Vocational Education 1 aircraft
- Thai Airways International Ltd 52 aircraft
- Thai Flying Club 24 aircraft
- Bangkok Airways Co Ltd 3 aircraft
- Thai Flying Services Co Ltd 4 aircraft

(See Appendix C for additional details of registered aircraft.)

As for the Ministry of Agriculture and Cooperatives, the approximate number of aircraft is 60 units with 30 fixed wing aeroplanes and 30 helicopters.

In the case of unpowered aircraft, the import statistics do not show that they are significant, although the import value seemed to have increased in recent years. (See Tables B-6 to B-24 in Appendix B for additional details.)

Source: See Table B-1 in Appendix B

Year	Number of Aircraft	Value (Million Baht)
1970-71	18	3.15
1971-72	18	3.15
1972-73	18	3.15
1973-74	18	3.15
1974-75	18	3.15
1975-76	18	3.15
1976-77	18	3.15
1977-78	18	3.15
1978-79	18	3.15
1979-80	18	3.15
1980-81	18	3.15
1981-82	18	3.15
1982-83	18	3.15
1983-84	18	3.15
1984-85	18	3.15
1985-86	18	3.15
1986-87	18	3.15
1987-88	18	3.15
1988-89	18	3.15
1989-90	18	3.15
1990-91	18	3.15
1991-92	18	3.15
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2014-15	18	3.15
2015-16	18	3.15
2016-17	18	3.15
2017-18	18	3.15
2018-19	18	3.15
2019-20	18	3.15
2020-21	18	3.15
2021-22	18	3.15
2022-23	18	3.15
2023-24	18	3.15
2024-25	18	3.15
2025-26	18	3.15
2026-27	18	3.15
2027-28	18	3.15
2028-29	18	3.15
2029-30	18	3.15

(a) Hat Yai Airport

Source: See Table B-1 in Appendix B

(b) Hat Yai Airport

Source: See Table B-1 in Appendix B

(c) Hat Yai Airport

Source: See Table B-1 in Appendix B

(d) Hat Yai Airport

Source: See Table B-1 in Appendix B

(e) Hat Yai Airport

Source: See Table B-1 in Appendix B

(f) Hat Yai Airport

Source: See Table B-1 in Appendix B

(g) Hat Yai Airport

Source: See Table B-1 in Appendix B

(h) Hat Yai Airport

Source: See Table B-1 in Appendix B

(i) Hat Yai Airport

Source: See Table B-1 in Appendix B

(j) Hat Yai Airport

Source: See Table B-1 in Appendix B

(k) Hat Yai Airport

Source: See Table B-1 in Appendix B

(l) Hat Yai Airport

Source: See Table B-1 in Appendix B

(m) Hat Yai Airport

Source: See Table B-1 in Appendix B

(n) Hat Yai Airport

Source: See Table B-1 in Appendix B

(o) Hat Yai Airport

Source: See Table B-1 in Appendix B

(p) Hat Yai Airport

Source: See Table B-1 in Appendix B

(q) Hat Yai Airport

Source: See Table B-1 in Appendix B

(r) Hat Yai Airport

Source: See Table B-1 in Appendix B

(s) Hat Yai Airport

Source: See Table B-1 in Appendix B

(t) Hat Yai Airport

Source: See Table B-1 in Appendix B

(u) Hat Yai Airport

Source: See Table B-1 in Appendix B

(v) Hat Yai Airport

Source: See Table B-1 in Appendix B

(w) Hat Yai Airport

Source: See Table B-1 in Appendix B

(x) Hat Yai Airport

Source: See Table B-1 in Appendix B

(y) Hat Yai Airport

Source: See Table B-1 in Appendix B

(z) Hat Yai Airport

Source: See Table B-1 in Appendix B

SECTION 2.0 : POLICIES, RULES AND REGULATIONS IN THE THAI AEROSPACE SECTOR

.1 Control of Aviation Activities

Thailand's first Air Navigation Act was promulgated in 1937. With developments in air transportation subsequently taking place rapidly, the initial Act was abolished and replaced by the Air Navigation Act, BE 2497 (1954) which is still in effect though amendments have been made from time to time.

According to the Air Navigation Act, all air navigation related matters are strictly controlled by the authorities for security and safety reasons. This includes aircraft registration, aircraft operators and personnel licensing, establishment of airports and air transportation facilities, and control of aviation rights, air fares and rates. The Civil Aviation Board chaired by the Minister of Transport and Communications is designated to be responsible for the enforcement of the Act.

.1.1 Aircraft Registration

In an attempt to ensure air safety, all kinds of aircraft in Thailand, public or private, are required to register at the Department of Aviation of the Ministry of Transport and Communications.

Applicants eligible for aircraft registration must have the following qualifications:

- (a) be the owner of the aircraft or authorized to possess the aircraft
- (b) be an individual person or a juristic person of Thai nationality.

In the case of a juristic person which is a business entity, it can be either

- an ordinary partnership with 100% Thai shareholding
- a limited partnership with at least 70% Thai shareholding provided all partners who are jointly and unlimitedly liable for the obligations of the partnership must be Thais; or
- a limited company with at least 70% of its shares held by

- * Thai nationals
- * Government agencies

* limited companies with at least 70% shares held by Government agencies.

In case where the juristic person is an association, its regulations must be approved by the Civil Aviation Board.

It should be noted that despite the Act allowing individual ownership in practice the Department of Aviation presently has no policy to approve such applications though, as described below, this may very well change in the relatively near future.

2.1.2 Licensing of Aircraft Operators and Personnel

Aircraft operators and related personnel must obtain a licence from the Department of Aviation.

A qualified pilot has to pass tests for flying skill and medical fitness, as well as show evidence of continued practical experience and proficiency. Other civil aviation personnel such as aircraft mechanics, air traffic controllers, flight operations officers, and ground mechanics are also required to hold valid licences in order to ensure the standard of their operations. In addition, all apron staff have to obtain permits from the Department of Aviation.

2.1.3 Flying Activities

No civil aircraft registered in Thailand can fly unless it holds a valid Certificate of Airworthiness issued by the Department of Aviation. In addition, aircraft are not allowed to land or takeoff at any other place than authorized airports and/or temporary air strips specified by the authorities.

Personal flying activities have to take place only in the approved area owned by the Thai Flying Club under the strict control of the Aviation Department. All of the aircraft are required to register under the name of the Club since in Thailand an individual is not officially allowed to own an aircraft for personal flying activities. At present there are a total of 26 aircraft of which 6 are owned by the Club and the other 20 "owned" by its members. Aircraft used for personal flying activities must be small aircraft with a maximum of 6 seats and a maximum taking-off weight not exceeding 2,500 kilograms. Procurement of the Club's aircraft must first have the written approval of the Minister of Transport and Communications.

The use of helicopters for personal flying activities is currently prohibited in Thailand though, as described below in Section 2.2.3, there are indications that this may change as part of a general relaxation of the somewhat restrictive rules and regulations presently in place.

The authorities have thus recently realized that it would be beneficial for the private sector to have the right to own aircraft for business purposes. The proposal prepared by the Department of Aviation to allow the private sector to own aircraft has been submitted to the Cabinet for consideration and approval. Once approval is obtained, the existing Air Navigation Act will be amended to accommodate this more liberal policy.

It has been disclosed that under the proposed amendment, private individuals or juristic persons wanting to own private aircraft must seek permission from the Minister of Transport and Communications and their planes must be installed with a radar mechanism so that their location can be tracked while airborne.

2.1.4 Air Security

Regarding air security, Thailand, as a member state of the International Civil Aviation Organization (ICAO), is bound to implement various security practices as stipulated by this body.

An operational plan was formulated by the National Civil Aviation Security Center in 1988 to use as the basis for coordination of airport security practices all over the country. According to this plan, the National Aviation Security Committee will become the focal point to direct problem-solving in any cases of unlawful interference to civil aviation. At each of the Thai airports, an airport security committee was set up and exercises were carried out to prepare security check-point staff and other relevant personnel for emergencies.

2.2 Operation of Private Airlines

2.2.1 Scheduled Flights

In order to accommodate the fast growing demand for air transportation services and to develop the country's civil aviation industry, the Ministry of Transport and Communications through the Department of Aviation in July 1984 implemented a new policy consisting of 3 main principles for privately-owned domestic airlines to operate scheduled flights as follows:

- (1) the airline(s) applying for the permission must be a public enterprise eligible for aircraft registration under Article 31 of the Air Navigation Act BE 2497;
- (2) the operational period should not be less than 5 years; and
- (3) the airline(s) must allow the Government to keep a close surveillance upon its operations.

The main purpose of this new policy was to promote domestic scheduled flights by privately-owned airline(s) for routes not covered by Thai Airways Co Ltd (now merged with Thai Airways International Co Ltd).

At present, Thai Flying Services and Bangkok Airways are the only two privately-owned airlines licensed by the Transport and Communications Ministry to operate domestic airline services. Tropical Sea-air is another airline whose proposal has been recently approved by the Department of Aviation to operate amphibious aircraft services in the Gulf of Thailand and Andaman Sea to promote tourism. The plans were approved for 5 years from 30 January 1990.

2.2.2 Non-Scheduled Flights

Realizing that international non-scheduled flights are vital to the country's tourism promotion, the Department of Aviation has set criteria to observe as principles on the evaluation of applications for permits to non-scheduled operators.

The overall objective of these criteria is to benefit the Thai tourism industry but maintain the balance between chartered and scheduled flights.

The criteria, approved by the Committee on Policy and Civil Aviation Development under the Ministry of Transport and Communications on 4 December 1984, are summarised as follows:

- create a market for a particular airport, which can develop into a broader international scheduled network;
- bring tourists from a virtually new source into Thailand;
- be justifiable chartered flights of tourists travelling as a group in accordance with standard criteria for various types of chartered flights; and

- act as a supplement to scheduled services during the tourist high season.

For all-cargo non-scheduled operations, as part of the overall objective of maintaining and improving Thailand's status as a major transit-cargo centre in the region, the Department of Aviation allows international non-scheduled airlines the freedom of carrying cargo from Thailand on condition that not less than 80 percent of their cargo are Thai exports, mainly agricultural products. All-cargo scheduled services on some main routes are also allowed as a special privilege to some airlines which do not possess the required traffic rights under specific air agreements.

Non-scheduled operations have been highlighted recently in line with the government policy to promote tourism. There are currently 5 non-scheduled cargo airlines granted the right by the Aviation Department to carry tourists from Hong Kong, Singapore, Europe and North America with the aim of helping promote the air transportation industry and to boost Thai exports.

Privately-owned airlines must still submit applications for permission every time they wish to operate non-scheduled flights.

2.2.3 Private Commercial Helicopter Services

The private sector has not been allowed to operate helicopters in the past since previous Governments considered private helicopter operations a security risk and felt it was too difficult to control their routes and operations.

However, as more radar and other air surveillance equipment are now available, the current Government in 1989 gave the "green-light" to allow private helicopter services. This change in policy lifted the 35-year ban on private helicopter operations and opened up a new era for the country's aviation industry.

Conditions set by the authorities to allow private helicopter operations emphasise security and as follows:

- owners or operators must be Thai companies or juristic persons requiring a helicopter service to support their business operations or acquiring them for rental purposes;
- applicants for helicopter operations must have a minimum registered capital of 5 million baht;

- the helicopters acquired must meet all international aviation standard requirements before being certified;
- the pilots must possess a valid licence with an approved rating;
- the operations would be limited to takeoffs and landings at airports under the authority of the Department of Aviation or the Airports Authority of Thailand;
- operators must inform the authorities in advance of all flight plans, including the take-off and landing time plus the routes to be taken; and
- operators wishing to operate overseas must seek special permission from the Transport and Communications Ministry and pay rental fees under the supervision of the Civil Aviation Board at a minimum rate of about 2,000 baht an hour.

The Transport and Communications Ministry granted the first private commercial helicopter licence to Thai Flying Helicopter Co on 19 January 1990. The company plans to provide helicopter services to the Minibea Group, mainly flying between Don Muang to Wang Noi in Ayudhya province and to Lop Buri province.

2.2.2 Currently, there are another 2 companies seeking for approval to operate commercial helicopter services for various business ventures.

2.3 Training Facilities

The Civil Aviation Training Centre of Thailand is a Government agency established within the Department of Aviation since 1961. It acts as an international training centre responsible for arranging training programs for local civil aviation personnel as well as those from other Asian and Pacific countries, using English as the instruction language.

Presently the Centre has two offices located in Bangkok and at Hua Hin Airport in Prachuab Kirikhan province. Ground operation related courses are conducted in Bangkok whereas flying training and maintenance courses are conducted at Hua Hin.

Apart from a government budget, the Centre also obtain financial and equipment assistance from international organizations such as the United Nations Development Programs (UNDP) and the International Civil Aviation Organization (ICAO).

In accordance with the Cabinet's resolution on 9 February 1988, the Centre was designated as an aircraft maintenance centre for small aircraft with not more than 2 engines and a takeoff weight not exceeding 12,500 pounds (5,670 kgs).

During 1988, the Centre provided a total of 40 courses for local and international trainees. It was staffed with 268 permanent government officials, 65 of whom were instructors, 54 were engineers and 149 were administrative staff.

At the moment, attempts are being made to upgrade the Centre into a state enterprise called the "Civil Aviation and Space Training Institute of Thailand". The plan, which requires an estimated investment of 150 million baht with contributions from Thai Airways International, Airports Authority of Thailand and the Aeronautical Radio of Thailand, has been approved in principle by the Cabinet in July 1989.

2.4 The Private Sector Role in Thai Aviation Development

Thai air transportation services have historically been handled exclusively by the Government and state enterprises. However, with demand in virtually all areas increasing dramatically in wake of the country's rapid economic and social development, it is becoming more and more difficult for the public sector to rely on their own financial, managerial and other resources to develop and expand these services to meet demand.

Accordingly, under the Sixth National Economic and Social Development Plan (1987-1991), private sector participation in investment in and operations of transportation services was emphasised along with the need to revise existing transportation laws, rules and regulations to create greater operational flexibility and efficiency.

A number of developments have since taken place to promote the role of the private sector in line with the revised National policy. This report describes the most important of these developments and identifies several specific projects currently in the planning or implementation pipeline but it should be emphasised that the Government's move to greater private sector participation is relatively recent and therefore still somewhat tentative and exploratory. This feature, especially when combined with the normal difficulties of bureaucracy and so on, will no doubt result in uncertainty and disappointment paralleling the identification and creation of profitable business opportunities for overseas companies.

SECTION 3.0 : THAI AEROSPACE MARKET STRUCTURE

The main users of aerospace products in Thailand are under the control of the Ministry of Transport and Communications (see Chart 1 in Appendix D). The three major departments in the ministry involved in these activities are

* Department of Aviation

* Meteorological Department

and * Department of Post and Telegraph.

In the early days, civil aviation activities were entirely under the control of the Royal Thai Air Force (RTAF). As Bangkok emerged as an Asian air hub and as air traffic increased, better facilities and services soon became imperative. Recognising the inconvenience of operating civil aviation through the Royal Thai Air Force, the government established

* Thai Airways International (THAI)

* Airports Authority of Thailand (AAT)

and * Aeronautical Radio of Thailand (AEROTHAI)

as state enterprises to operate and manage civil aviation activities on behalf of the government while regulation and control is placed under the Department of Aviation.

Due to the pioneering role of the RTAF in civil aviation, it became a tradition that senior Air Force officers assume the top management positions of these state enterprises especially in THAI and AAT.

Another major ministry which has an impact on the aerospace sector is the Ministry of Agriculture and Cooperatives (MAC). It is a main user of airplanes and helicopters with a fleet of about 30 units of each. The mainly small two-engine propeller driven airplanes and helicopters are used for the ministry's activities such as rainmaking and monitoring of weather and forestry conditions.

The MAC's activities are outside of the control of the Aviation Department. The Agricultural Aviation Division of the Office of the Permanent Secretary operates the Ministry's planes as requested by other departments and units. For example, it undertakes rainmaking activity upon request of the Royal Rainmaking Research and Development Institute which is mainly a research agency (see Chart 2 in Appendix D).

Due to the restrictions placed on civil aviation and telecommunications by various Thai laws, nearly all of the commercial operations and activities in these areas are carried out by government agencies and state enterprises. Only in recent years did the government begin to recognize the importance of the private sector in developing the country's aerospace sector.

3.1 Procurement Processes of Government Agencies and State Enterprises

Government agencies and state enterprises including

- * Ministry of Agriculture and Cooperatives
- * Department of Aviation
- * Aeronautical Radio of Thailand (AEROTHAI)
- * Airports Authority of Thailand (AAT)

and * Thai Airways International (THAI)

are the major users of aerospace products in Thailand.

The procurement processes of these institutions are quite similar and have to proceed according to government regulations. For investments above 400,000 baht, the general approach is done through bidding.

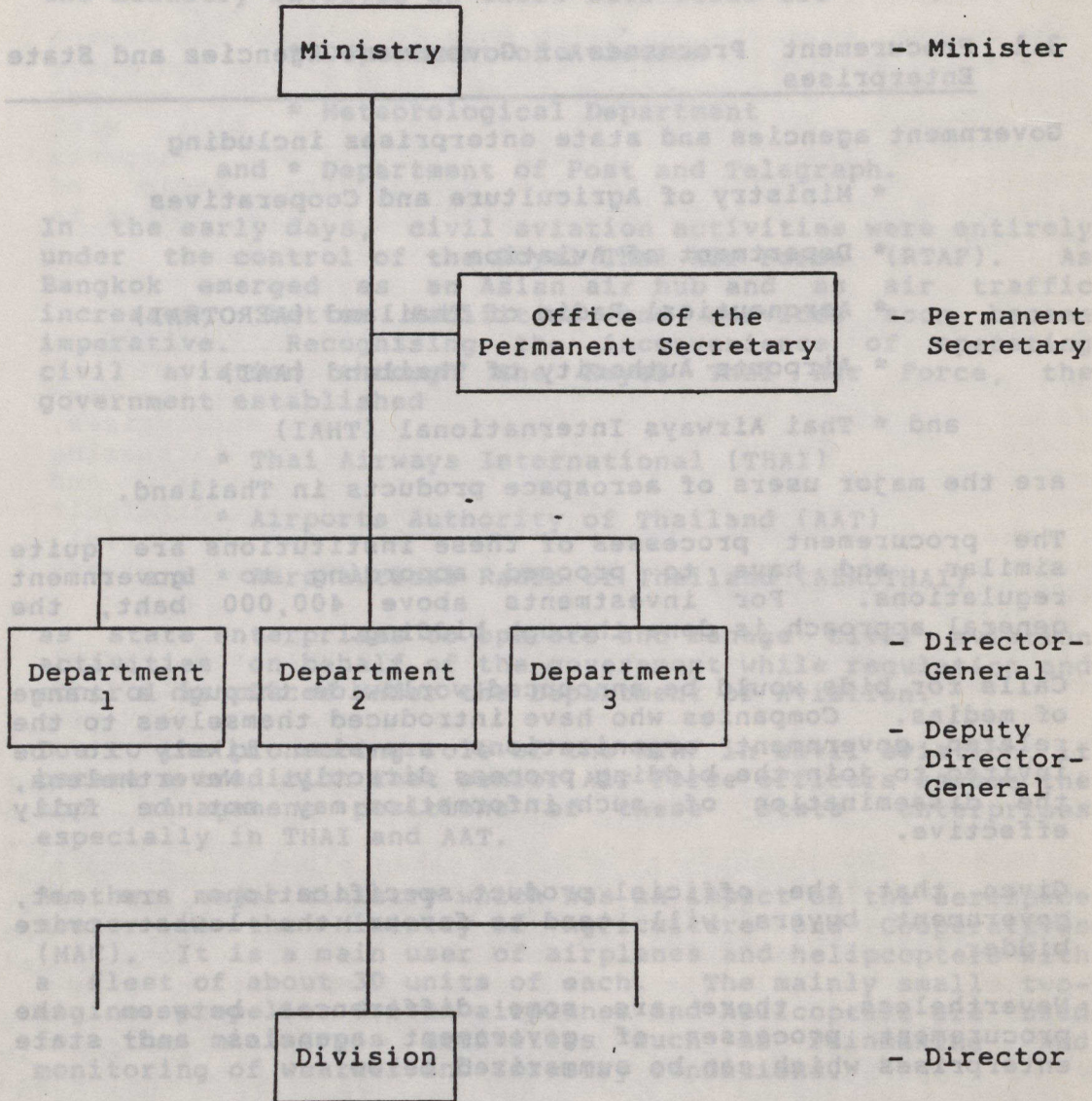
Calls for bids would be announced worldwide through a range of medias. Companies who have introduced themselves to the related government organizations are also likely to be invited to join the bidding process directly. Nevertheless, the dissemination of such information may not be fully effective.

Given that the official product specifications are met, government buyers will tend to favour the lowest price bidder.

Nevertheless, there are some differences between the procurement processes of government agencies and state enterprises which can be summarized below.

3.1.1 Government Agencies

The organization chart below shows that the Ministry is in charge of several departments while the Department, behaving like an organization, is composed of many different divisions. As there is no central government purchasing organization, the department carries out its own procurement.



The various steps leading to the procurement of products can be summarized in the following:

- (1) The Planning and Policy Division of the department evaluates its past performance and forecasts its future growth feasibilities together with the required investments. It then formulates a long term plan generally not less than 3 years (about 5-10 years) which will be sent to the Director-General of the Department for consideration. Normally, a revised long term plan will be prepared every year.
- (2) If the procurement plan is within the scope of the department's authority, the Director-General will set up a committee to consider the matter. (Otherwise, the matter will be referred to the Minister or the Cabinet.) He will appoint a Project Committee - consisting of relevant parties of the organization - and its chairman. The committee will be responsible for conducting feasibility studies and presenting recommendations to the Director-General.
- (3) The Project Committee will normally appoint a sub-committee, chaired by the Chief of the Technical Division, as a working group in conducting the feasibility studies. This sub-committee will help to establish the required specifications and conditions and may join in the bidding process later on.
- (4) After the sub-committee has finalised its study, the results together with the recommendations will be forwarded to the Project Committee which will undertake to make whatever amendments it deems appropriate before forwarding it to the Director-General of the Department.

Each organization must put forward a future development plan which forecast its requirement of aerospace products and the necessary budget to be obtained from the government.
- (5) Once the Director-General has approved the long term plan together with the potential investment projects, they will be sent to the Permanent Secretary of the Ministry who will screen it. At this stage, the Permanent Secretary will also draw up the composition of 3 committees which would be involved in the procurement process - the Procurement Committee, the Bidding Committee and the Receiving and Inspection Committee - and forward them to the Minister together with the long term and procurement plans.

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The functions of the three committees are as follows:

- The Procurement Committee, which is the major committee and consist of the organization's senior officers, is to oversee the overall procurement policy. The key post of chairman is dependent on the amount of budget or money involved which generally is based on the authority of officials as follows:

	<u>Million Baht</u>
Director of Division	maximum 2
Deputy Director-General	maximum 5
Director-General	maximum 8
Permanent Secretary	8-32
Minister	over 32

- The Bidding Committee, which consist of technical experts, will assist the Procurement Committee in conducting feasibility studies, draw up the specifications and conditions, and conduct the bidding process and then provide the recommendations to the Procurement Committee. The Director of the Technical Division is always appointed as chairman of the committee.

- The Receiving and Inspection Committee, which is responsible for receiving and inspecting the procured products based on the qualities established in the terms of reference.

(6) The Minister, after having considered and is satisfied with the package of proposals sent to him from the Permanent Secretary, will forward them to the Cabinet for approval after which a budget request can be incorporated into the government's fiscal year expenditure on an annual basis.

(7) Once the budget has been approved and allocated, the bidding process can begin. The ad-hoc Procurement Committee proposed by the Minister and appointed by the Cabinet will start to conduct the bidding process. It is possible that members of the Project Committee may be re-appointed as members of the Procurement Committee.

- (8) The Procurement Committee will work with the appointed ad-hoc Bidding Committee in preparing the detailed terms of reference incorporating the technical specifications together with the terms and conditions of the project and invite bidders to send in their project proposals based on such terms of reference.
- (9) With the passing of the deadline for sending in the bid proposals, the Bidding Committee will screen and prepare a short-list of the bidders subject to their meeting the requirements of the terms of reference.
- (10) The short-listed bidders together with the Bidding Committee's recommendations are then forwarded to and considered by the Procurement Committee who will again follow closely the terms of reference.
- (11) The Procurement Committee will make whatever amendments it deems appropriate and forward its final recommendations to the Minister who will either decide on the matter or refer the matter to the Cabinet for approval. The latter approach is usually chosen if it is a large and/or sensitive project or there are some governmental restrictions involved in the case such as meeting the public sector's foreign borrowing limit if the project involves foreign funding.
- (12) Once the decision has been undertaken, the Receiving and Inspection Committee will take over in dealing with the supplier regarding the delivery and inspection of the procured products.

3.1.2 State Enterprises

The procurement process of state enterprises is somewhat more complicated than those of government agencies. It can be divided into two forms of procurement.

(a) Procurement of Long Term Investment Products

This involves the procurement of major investment products such as THAI's aircraft fleet, AEROTHAI's replacement of the radar system, etc.

The various steps leading to the procurement of products can be summarized in the following:

(1) The first step of a state enterprise's procurement process is similar to that of government agencies. The Planning and Policy Division reports to the senior management its evaluation of the organization's performance and also forecast its future growth feasibilities together with the required investments. A long term plan of 5-10 years is also normally drawn up and presented to top management every year.

(2) The senior management will forward the long term plan together with the evaluation of the Planning and Policy Division to the Board of Directors who will forward them to the Long Term Planning Committee (LTPC), which is a committee set up to assist the Board, for screening and recommendations.

The Board is composed of representatives from many related institutions especially senior officers of the Ministry of Transport and Communications (see Appendix E for additional details of state enterprises' boards).

(3) If further work or studies are required, the LTPC will refer the matter back to management through the Board. Management then proceeds to appoint sub-committees to conduct the required feasibility studies together with making recommendations to it. The sub-committees usually consist of executives of the organization as recommendations are based on the organization's policy and strategy.

(4) The study results of the various sub-committees will be sent to the LTPC through senior management and the Board of Directors. The LTPC will then consider all the proposals and information received and prepare the package of plans and investment projects which would be forwarded back to the Board for approval.

(5) When agreement has been reached, the state enterprise's Board will forward the plan together with the investment projects to the Ministry for approval and further processing.

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The package of proposals sent to the Ministry will also include the establishment of three committees - the Procurement Committee, the Bidding Committee and the Receiving and Inspection Committee - and their members similar to government agencies.

- (6) Once the Ministry has approved the state enterprise's plan, investment projects and committees, they will be forwarded to the National Economic and Social Development Board (NESDB) for screening to ensure that it is consistent with the government's overall policy objectives.
- (7) When endorsed by the NESDB, the plan, investment projects and committees will be forwarded to the Cabinet for approval.
- (8) Once the package of proposals has been approved by the Cabinet, the relevant agencies will then forward the annual budgetary requirements to the Budget Bureau or the required borrowing to the Ministry of Finance for further processing.

When approval for the investments have been given, the procurement process follows that of the government agencies as outlined above.

Generally, the whole process takes more than three years to complete. The Planning and Policy Division must therefore plan ahead for at least 3 years. This is why most organizations must draw up long term plans of generally about 5 years or more. The long term plan are prepared on a rolling basis with updates made every year in order to formulate appropriate strategies to meet the changing circumstances.

(b) General Procurement

The procurement of spare parts, equipment, tools, etc, is looked after by the Technical Division of each organization.

In the procurement process, state enterprises have to use the bidding process in the same way as the government. There are three committees - the Bidding Committee, the Procurement Committee and the Receiving and Inspection Committee - involved in conducting the process.

In the case of state enterprises, the final procurement authority rests with the Board of Directors. The state enterprises are able to deal directly with the product suppliers. However, if the money involved is a large amount, which would impact on the country's financial position, the decision may be passed to the Minister or Cabinet.

3.2 Major Bidding Criteria

The major explicit criteria generally established by government agencies and state enterprises in considering project proposals in the aerospace sector - ranked by priority - include:

- Technical Specifications and Conditions
- Price
- Other factors.

Each institution generally sets its own technical specifications as most of them have well-established Technical Divisions. The basic requirement for a bid to be considered is that it must perform equally or better than the established technical specifications. The factors here include the type of technology, the capacity and efficiency of the product, and the supporting services.

Only products whose performances satisfy the required tests will be put forward for further consideration. Because there are only a few manufacturers of aerospace products with readily available information of their specifications (recommendations are usually provided by international organizations, such as WMO, ICAO, NASA, etc), comparison of product performance can be done easily.

Price becomes important only when the bidder meets the technical specifications.

In emergency procurement cases, if government agencies could not find sources of financing in time, the bidders would be notified of the situation so that they can calculate their bidding prices to account for the waiting period before payment is finally made.

Apart from the technical specifications and the price factors, the organizations also consider the good-will and reputation of suppliers because safety, efficiency and timeliness are very important factors in the aerospace industry.

Because the organizations have to obtain financing and approval from the government, the bureaucratic red tape and budget constraints are said to have hindered many development projects. Assistance provided by suppliers to government agencies and state enterprises have therefore proved to be effective in assisting them to penetrate the Thai market.

The assistance provided to the agencies and state enterprises, particularly those relating to future development projects, can help many projects take off. This could also be a major supporting factor in inducing organizations to try out new technology and products.

An example of this is the case of Pratt & Whitney (P&W) who had offered financial assistance to THAI to set up a Maintenance Centre for its engines. This offer coincided with the previous THAI board's policy to create competition between suppliers as THAI's fleet is large enough to utilise more than one type of engine. This has made it possible for P&W to crack the engine market previously monopolized by General Electric.

3.3 Role of Foreign Governments

In general, there are no direct financial assistance from foreign governments to the Thai government relating to the purchase of aerospace products. However, there could be indirect assistance in the form of subsidies provided to suppliers who are participating in the bidding process in order to increase their competitive edge over other countries.

Nevertheless, there are foreign financial assistance not directly related to the procurement of aerospace products granted to the Thai government.

For example, West Germany is preparing to assist the Thai government in setting up an aircraft maintenance centre at U-Tapao Airport. The German government is in the process of conducting a feasibility study on the potential of the maintenance centre which is expected to be completed in three months.

In such cases, it is uncertain how much of an impact the goodwill gesture would have on the procurement of products by various government agencies and state enterprises.

3.4 Role of Middlemen

Although there is a bidding process and eventually the government agencies and state enterprises will deal directly with the suppliers, the role of middlemen in the Thai aerospace market is quite important and indispensable.

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Because procurement information of government agencies and state enterprises may not be effectively disseminated, middlemen or representatives can help suppliers to monitor activities in the public sector. Furthermore, middlemen can assist in identifying opportunities and threats, and strengths and weaknesses of competitors.

They can also help to lobby or exercise indirect influence on the outcome of the procurement process.

Although the procurement system and the decision criteria presented above indicates a systematic and objective approach in the public sector's decision making process. In reality, it is not entirely free from fault, because there are numerous ways to influence the decision making process especially when the process is a long one with many committees handling the matter.

In addition, the procurement system as outlined above may not be strictly observed in all cases. This would depend very much on the existing government and the various agencies involved. For example, the role of the NESDB varies with the government. In the previous government, it would be difficult to bypass the NESDB's screening process. However, under the present government, the NESDB's role seemed to have declined.

Recently, the Transport and Communications Minister contended that there should be no need to submit future plans to buy new aircraft for THAI through the NESDB because the NESDB Secretary-General is already sitting on the airline's Board of Directors. If this proposal were to be accepted, there will be a significant change in the procurement process of THAI and other state enterprises.

In fact, the present government has been increasingly resorting to special Cabinet resolutions in the past year to bypass the established procurement process with the argument of speeding up the process. In such emergency procurement cases, the project will not need to go through the normal budgeting process. It can go directly to the Cabinet for special approval.

The government agencies may contact suppliers directly in such cases without going through the normal bidding process. However, senior officials' authority to approve spending will be halved from normal cases in these instances. In actual practice, this does not have much of an impact, because permanent officials would want to get the final approval from the Minister or the Cabinet in order to protect themselves anyway.

In order to understand the intricacy of the Thai procurement system, which may not necessarily follow past established rules of conduct, and to undertake effective lobbying effort, local representatives are usually appointed. For example, the major aircraft suppliers of THAI's fleet - Boeing, Airbus and McDonnell Douglas - each have their own local representatives in Thailand, namely,

<u>Supplier</u>	<u>Representative</u>
McDonnell Douglas	Italhai Co Ltd
Boeing	Loxley (Bangkok) Co Ltd
Airbus	Mr Amnuay Kasemsub

With the exception of the Ministry of Agriculture and Cooperatives, most agencies prefer to deal direct with their foreign suppliers and have no requirement for middlemen.

The Ministry of Agriculture and Cooperatives' policy of dealing only with foreign suppliers' authorized representatives stems from the limited ability of its Technical Division. The Ministry, in making purchases through the local representatives, can be assured of guaranteed after-sales services and assistances.

In the case of special products such as rain-seeding plane, the Ministry of Agriculture and Cooperatives may contact the manufacturer directly because there are only a few manufacturers.

Apart from the requirement that the local representative must produce a letter certifying its status as the authorized representative of the foreign manufacturer, there is also a requirement for the local representative to obtain a certificate from the embassy of that manufacturer.

3.5 Private Sector Role and Its Procurement

The private sector's role in the Thai aerospace sector is still quite limited due to the restrictions placed by outdated laws which overemphasized security concerns.

Furthermore, commercial aviation has been monopolized for decades by THAI and Thai Airways Co (now merged with THAI). These institutions are quite protective of their turf. Even when the private sector was allowed to take over certain functions, they must receive permission and blessing from these state enterprises.

Despite the booming aviation sector, no real progress has been made in changing the outdated laws so far. This could be due to vested interest as these state enterprises are protected by high public officials who are reluctant to relinquish control of their power.

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In the aviation sector, there are only two privately-owned commercial airlines operating in the Kingdom at present, namely,

- Bangkok Airways Co Ltd which operates scheduled flights between Bangkok-Samui Island and Samui Island-Phuket with 3 aircraft.

and - Thai Flying Services Co Ltd which operates airtaxi services and chartered flights with 4 aircraft.

However, Tropical Sea-Air Co Ltd, which is another privately-owned airline, has recently received approval from the Department of Aviation for its proposal to operate chartered flights to promote tourism but has yet to commence operations.

As THAI controls the traffic rights of all the premium routes, it is quite difficult for other private airlines to emerge. Private airlines with smaller aircraft such as Bangkok Airways are only operating as gap fillers.

With memories of Air Siam - the country's only private international airline - being forced out of operations by the government in 1972 after 11 years in business, the government would have to give strong support to the private sector if it is serious in soliciting private sector participation in the aviation sector.

Nevertheless, the booming and rapidly maturing Thai economy has led to an increase demand for air transport by major private business and industrial groups. The private sector has therefore shown keen interest in operating such services. Recently, there have been interest in starting helicopter services by a couple of local companies.

The extent of private sector involvement in the aviation sector depends very much on the government response.

SECTION 4.0 : PROCUREMENT PLANS AND PROJECTS OF MAJOR INSTITUTIONS

With the Thai economy expected to continue its high growth pattern in the next decade, the aerospace sector is expected to do well. In fact, the growth of the sector should be higher than the general economic growth as infrastructure in the aviation sector is still relatively underdeveloped. Demand for aerospace service should grow by about 15% per year in real terms over the next decade.

The high growth of the aerospace sector should lead to large procurement of products by various government agencies and state enterprises. The following sub-sections will outline the existing development and procurement plans of these institutions separated into institutions in the aviation sector.

The government agencies and state enterprises covered here include the Department of Aviation, Airports Authority of Thailand, Aeronautical Radio of Thailand and Thai Airways International.

4.1 Aeronautical Radio of Thailand Ltd (AEROTHAI)

(1) Development Projects in 1990

(a) Bangkok International Airport

AEROTHAI is investing 350 million baht to modernize its radar system in order to improve aviation safety control nationwide. The new primary radar system costing 200 million baht will be supplied by the Italian firm - Selenia Industries Associate Spa - to replace the former system supplied and installed in 1976 by the same firm. It will be capable of monitoring aircraft at higher altitudes and providing greater accuracy.

The remaining 150 million baht will be spent on infrastructure and related equipment.

Selenia was selected from among five bidders with the other four participants being Marconi Radar Project Ltd, Raytheon Canada Ltd, Thomson - CSF and Toyo Menka Kaisha Ltd (Toshiba) of Japan.

Installation of the new radar system bought from Selenia will commence from March 1990 and is expected to be completed in July 1990.

(b) Phuket International Airport

A Toshiba Model TW-1374C primary radar system operating in the S-BAND (2700-2900 mhz) wave length with a radius of 60 nm to be used for the airport's approach control operations is being installed and it is to be completed in July 1990 and expected to be operating by September 1990.

(c) Hat Yai International Airport

A Selenia Model ATCR-33-M primary radar system operating in the S-BAND (2700-2900 mhz) wave length with a radius of 60 nm to be used for the airport's approach control operations is being installed and it is to be completed in August 1990 and expected to be operating by October 1990.

(d) Chiang Mai International Airport

A primary radar system and a Monopulse type of secondary radar system will be completely installed in July 1990 and expected to be operating by September 1990. The radars will come from Selenia of Italy.

The airport will install Toshiba's D-VOR (Doppler Very High Frequency Omni-Direction Range) air navigation aids equipment in April 1990 which will be completed in May 1990.

(e) Surat Thani Airport

A NEC Model NPG-1323 secondary radar system is being installed and it is expected to be operating by the end of 1990 linking up with the primary radar system now under installation in Bangkok. The new radar will be used for the airport's Enroute Control Operation with a radius of 256 nm.

(2) Future Development Plan

(a) Chiang Mai International Airport

The airport is planning to install NDB (Non-Direction Beacon) and ILS (Instrumental Landing System) air navigation aids equipment in 1991-1992.

(b) Phuket International Airport

The airport is planning to install NDB air navigation aids equipment in 1991.

(c) Hat Yai International Airport

AEROTHAI is going to call for bids of D-VOR air navigation aids equipment soon and is expected to announce the result by the end of 1990.

4.2 Airports Authority of Thailand (AAT)

(1) Air Traffic Forecast

According to the Ministry of Transport and Communication's study, Bangkok International Airport's (BIA) traffic is forecasted to exceed the current maximum passenger capacity of 16 million people and current maximum air cargo capacity of 430,000 tons by 1991 based on the growth rates over the past two or three years of 20 per cent annually (see Table 4.1). This is expected to outstrip the traffic at Singapore's airport.

TABLE 4.1

FORECAST OF AIR TRAFFIC

Year	Passenger (1,000 persons)			Cargo (1,000 tons)		
	BKK 1/	BKK 2/	SIN 3/	BKK 1/	BKK 2/	SIN 3/
1988	9,892	9,892	12,595	292	292	512
1989	11,870	11,870	13,855	350	350	564
1990	14,244	14,244	15,240	420	420	620
1991	16,381	17,093	16,764	483	483	682
1992	18,838	20,511	18,441	555	555	750
1993	21,663	24,614	20,285	638	638	825
1994	24,913	29,536	22,313	734	766	908
1995	28,650	35,444	24,545	844	919	999
1996	-	-	-	971	1,103	1,098
1997	-	-	-	1,117	-	1,208
1998	-	-	-	1,284	-	1,329
1999	-	-	-	1,477	-	1,462

Note : 1/ No additional measures for Bangkok Airport
 2/ Additional measures for Bangkok Airport
 3/ Information survey on Singapore Airport

Source: Ministry of Transport and Communications

To cope with this rapid growth, the Airports Authority of Thailand is planning to expand further the international passenger terminal on the Vibhavadi-Rangsit Highway so that it can handle an additional 10 million passengers a year. The expansion is expected to be completed over the next three years. This means that by 1994 the expanded airport's capacity will again be fully utilized.

2) Airport Development

The above study showing BIA's capacity to be fully utilized in the next few years has led the Ministry of Transport and Communications to set up an ad-hoc Committee of Air Transportation to conduct 3 feasibility studies as follows:

- * Expansion of BIA's international and domestic passenger terminals, cargo terminals and runway.

- * Development of U-Tapao Airport, which is now under the jurisdiction of the Royal Thai Navy in the Eastern Seaboard Area, to become an international airport to help relieve air traffic at BIA.

- and * Construction of a second international airport near Bangkok at Tambon Rajatava, Samut Prakarn Province, about 20 kms to the east of Bangkok and known by the name of "Nong Ngu Hao".

As a result of the studies, it has been recommended that a second international airport should be built. The project would involve an investment of about 30 billion baht and will take 6-10 years to complete. The new airport is expected to be able to accommodate 20 million passengers a year.

However, it has been reported that the present Prime Minister does not feel it necessary to implement the project at the present. This has therefore resulted in the suspension of the plan to build the new airport at Nong Ngu Hao for the time being.

The main policy of the government at present is to utilise the existing airports in the provincial areas especially Phuket, Hat Yai, Chiang Mai, U-Tapao, Ubon Ratchathani and Chiang Rai to help relieve traffic at BIA.

The Government would also like to develop U-Tapao Airport into an international airport. Not only would U-Tapao relieve air traffic at BIA and support tourism in Pattaya, it is also expected to support the development of the Eastern Seaboard Area.

The present policy is expected to require less investment money and less time to implement (or approximately 2-3 years) than the case of a new airport.

Recently, the Department of Aviation has been urging the government to reconsider the plan for the construction of a second international airport again in response to the faster than expected growth in passenger and cargo traffic at BIA.

Although the Aviation Department prefers the construction of a new international airport, the Airports Authority of Thailand has commissioned a consultant firm - Louis Berger International Inc - to conduct a feasibility study into the expansion project.

The Aviation Department has argued that, even if BIA were to be expanded, it would still be necessary to build a second airport over the next decade. The need for a second airport is magnified when considered in relation to the ambitious plan of the Transport and Communications Ministry to turn Bangkok into the regional aviation hub to replace Singapore.

(3) Projects in 1990

(a) Bangkok International Airport

- * Extending and improving the eastern runway and associated facilities
- * Improving the cargo terminal
- * Installing Y-positioned boarding bridges
- * Expanding the domestic terminal
- * Installing 5 escalators at the northern corridor

(b) Chiang Mai International Airport

- * Improving the aircraft parking apron in front of the old terminal
- * Improving the ground handling equipment area and constructing a storage building for maintenance equipment
- * Expanding the parking lot in front of the airport

- * Improving the airfield drainage system
- * Extending and improving the old parallel taxiway

(c) Hat Yai International Airport

- * Expanding the aircraft parking apron in front of the terminal
- * Improving the parking lot
- * Installing two boarding bridges

(d) Phuket International Airport

- * Developing a taxiway connecting the new aircraft parking apron with the existing one
- * Installing two boarding bridges

To support long term planning, AAT has hired Louis Berger international Inc to develop its master plan covering systematic development of all airports under its responsibility including suggestions on the second international airport.

(4) Future Development Plans

(a) Bangkok International Airport

- * Constructing a new cargo building
- * Constructing an office building for cargo agencies

(b) Chiang Mai International Airport

- * Extending and improving the existing parallel taxiway
- * Installing boarding bridges and developing the present passenger terminal
- * Expanding and improving the aircraft parking apron
- * Installing and improving the airport electrical system

(c) Phuket International Airport

- * Constructing a taxiway and extending the existing runway

(d) Ubon Ratchathani Airport

The Cabinet meeting in Khon Kaen in April 1989 approved the plan to develop Ubon Ratchathani Airport into an international airport. The airport will enable direct flight to Indochinese countries, Hong Kong, the Philippines and Japan.

The planned international airport at Ubon Ratchathani is expected to be completed in 1993 and will require an investment of 375 million baht. The passenger terminal and runway of the existing airport will be expanded to meet international standards in order to accommodate international traffic.

4.3 Department of Aviation

(1) Airport Development Projects

Several provincial airport development projects were incorporated into the Sixth National Economic and Social Development Plan (1987-1991), ie, Surat Thani, Udon Thani, Ubon Ratchathani, Phuket, Chiang Rai (new site), Krabi, Sakon Nakhon, and Mae Hong Son. Details of the projects and progress made so far are as follows:

(a) Surat Thani Airport

Surat Thani is currently used by both civil and military aviation. The runway is 45 metres wide and 2,500 metres long with an asphaltic concrete surface. The taxiway is 23 metres wide and 282 metres long. The terminal building can cater to about 130 passengers. With a budget of 103.8 million baht, the runway, taxiway, and existing apron will be resurfaced and extended. Airport electrical systems will also be improved. At completion, the apron will be able to cater to 2 B737s and 1 Airbus or 1 McDonnell-Douglas simultaneously. Construction commenced in June 1988.

(b) Udon Thani Airport

In order to accommodate commercial Airbus flights, 300 rai of additional land is required. New development to take place in this additional land area include construction of an apron - 90 metres wide and 180 metres long - with a concrete

taxiway; construction of an apron service area of 1,500 square-metres where all equipment can be stored; construction of an all new passenger terminal equipped with passenger handling facilities as well as car park and a fire station. The initial work was to purchase land in 1988. At completion, the airport will be able cater to 2 Airbus and 3 Shorts simultaneously and access to the airport (entrance and exit) will then bypass the military area.

(c) Ubon Ratchathani Airport

A land area of 225 rai is required to construct an apron of 120 metres wide and 180 metres long (which can park an Airbus and 2 Shorts simultaneously), a taxiway of 30 metres wide and 230 metres long, a car park, internal roads, and lighting systems. An all-new passenger terminal of 18,000 square-metres, which will be able to accommodate 1,200 passengers during rush hours, will be built in this area. The budget for developing this airport was estimated to be 346.4 million baht.

(d) Phuket Airport

This project comprises construction of a 23,000 square metre passenger terminal equipped with an air-conditioning system, baggage handling belts, escalators, telephones and sound systems. When completed, the terminal will be able to cater to 1,750 passengers during peak periods. The project, which costs 149.3 million baht, commenced in October 1987 and is scheduled for completion by the end of 1989. A new control tower with an ATC radar system and additional internal roads will also be constructed and installed.

Phuket Airport has in 1988 been promoted into an international airport. The management of the airport's operations has since been transferred to the Airports Authority of Thailand.

(e) Chiang Rai Airport (new location)

This project, which is designed to accommodate Airbus aircraft, is still in the stage of land procurement. A total of 3,275 rai is required at Tambon Ban-doo and Tambon Rim Gok, Amphoe Muang, Chiang Rai. This area is connected to Highway No 110, Chiang Rai-Mae Chan. Total cost of the

project including land cost would be about 526 million baht. The airport will comprise of a runway of 45 metres in width and 3,000 metres in length, a taxiway, an apron of 120 metres wide and 180 metres long, a passenger terminal, a control tower, a 2,000 square-metre car park, access roads, and airport perimeter roads. The project is scheduled for completion in 1990-1991.

(f) Krabi

The Transport and Communications Ministry has approved in principle a proposal to build a new airport in this southern province to support the Southern Seaboard Development Programme.

Krabi's present airport is located in a small area of only 1,000 rai which cannot be expanded. The province has chosen a 5,000 rai area in a national forest reserve near Ban Tha Yang in Tambon Khlong Khanan, Muang District, to build the new airport.

The development projects at Sakon Nakhon and Mae Hong Son include the resurfacing of runways, taxiways, and aprons.

(g) New Airports

The Department of Aviation is planning to build new provincial airports at Burirum, Roi-et, Ranong and Lom Sak. The Department expects to implement the projects in the next few years.

(2) Air Navigation Aids and Communications Equipment Development Projects (1988-1990)

The procurement of air navigation aids and communications equipment is summarized in Table 4.2.

TABLE 4.2

PROCUREMENT OF AIR NAVIGATION AIDS
AND COMMUNICATIONS EQUIPMENT

Item	Site	Budget (Million Baht)
Purchase 1 Flight Inspection Aircraft	Bangkok	205
Purchase Automatic Message Switching System	Bangkok	74
Procure and Install DVOR/DME	Phuket	15
	Rungsit	17.4
	Chiang Mai	16.4
	Udon Thani	20
	Phitsanulok	20
Procure and Install ILS -	Phitsanulok	N.A.
	Udon Thani	108
	Ubon Ratchathani	N.A.
	Phuket	35.6
Procure and Install NDB	Khon Kaen	2.2
	Ubon Ratchathani	3
Procure and Install COM Equipment via Satellite System	Surat Thani	7
	Khon Kaen	N.A.
Install - ASR Radar System - SSR Radar System	Phuket	120
	Surat Thani	63
	Chiang Mai	250

Note : DVOR/DME = Doppler Very High Frequency Omni-
Direction Range/Distance Measuring
ILS = Instrument Landing System
NDB = Non-Direction Beacon
COM = Communications

Source: Department of Aviation

4.4 Thai Airways International Ltd (THAI)

(1) Aircraft

THAI is planning to move away from a domestic feeder system using small planes such as Shorts 330s and 360s which are in current use. The airline is looking at replacing them with a longer range aircraft - probably turbo-props - with 40-50 or possibly 60-seat capacity.

The plan is to phase out the Shorts over a two-year period. When a more suitable type of aircraft has been added to the THAI fleet, direct services for city-to-city travel can be stepped up.

THAI plans to almost double its regional as well as domestic flights in the next five years in compliance with the government's policy to make Bangkok the regional aviation hub.

In April 1989, an urgent proposal for the purchase of 13 new jetliners was approved by the Cabinet. These 13 new planes plus the 8 previously already on order will increase THAI's fleet by another 21 aircraft once they are delivered. As one each of ATR 72 and two Boeing 747-400s have already been delivered, the rest of these orders consist of:

ATR-42	2
ATR-72	1
Boeing 737-400s	7
Airbus A300-600s	3
Boeing 747-400s	1
MD-11	4
	<hr/>
	18
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The above orders were made under the previous five-year plan (1984/1985-1988/1989).

The revised five-year plan (1989/1990-1993/1994) will see THAI acquiring up to 23 additional aircraft compared to the original 11 targeted. Most significant is the revision in favour of aircraft acquisition to serve regional routes over inter-continental ones.

In November 1989, a massive long-term fleet expansion programme for THAI was finalised by a special planning committee and is now under the consideration of THAI's Board of Directors. Of the latest aircraft purchase plan, in which THAI executives have proposed the purchase of 23 new aircraft, orders have already been placed since October 1989 for 18 aircraft, namely,

Airbus A300-600s	5
Airbus A330s	8
Boeing 747-400s	5

while it is believed that the remaining 5 aircraft to be ordered will be of a smaller type for domestic operations. The aircraft should be able to accommodate about 100 seats each.

After having leased the first 2 British Aerospace BAe 146 aircraft to serve its domestic services in 1989, THAI found that the BAe 146 to be the most suitable aircraft for use on its domestic routes especially where the domestic airport has short runways.

The BAe 146 which is an 83-seat four-engine jetliner is popular with passengers for its comfort and low noise within the cabin. THAI currently operates five BAe 146 on domestic routes. Its performance in the past has given THAI much confidence in the aircraft, particularly its 99.8% despatch time. It costs much less than the B737-400 in both aircraft and maintenance costs.

THAI currently has four BAe 146-300s and one BAe 146-100s in service. The acquisition of the five aircraft was initially arranged under a two-year lease agreement, under which the airline agreed to pay a monthly lease of US\$ 200,000 per unit. A comparative study between leasing and a 10-year hire purchase of these aircraft is in process.

THAI is also considering many smaller-sized aircraft which could be used to operate on those routes currently served by BAe aircraft including ATR, Saab, Fokker and Boeing, because the airline need another five smaller aircraft to serve its fleet expansion plan.

(2) Engine

ACM Kaset Rochananil, who became Chairman of THAI last October, is implementing an aircraft procurement policy that is contrary in almost every area to that set by his predecessor, ACM Voranat Apichari, who wanted to subject engine purchases to the tendering process.

ACM Kaset has specified that Boeing B747 aircraft should be fitted with General Electric (GE) engines while the Airbus should have Pratt and Whitney (P&W) engines. However, an exception will be allowed for the first four Airbus aircraft which will use GE engines because P&W is unable to meet the delivery time.

APPENDIX A : BILATERAL AIR AGREEMENTS

At present, there are a total of 52 aircraft in THAI's fleet and the number is expected to reach 93 by 1993. This is considered to be large enough to support two engine suppliers in its operation.

To date, most of THAI's aircraft are fitted with GE engines. Only the B737-200s and Shorts use P&W. As far as major repairs and maintenance are concerned, THAI mechanics are familiar with GE engines but are as yet unable to provide full servicing on P&W engines.

Now that THAI has established the new engine purchase policy, the airline will have more P&Ws in service and this will require further expansion of the repair and maintenance facilities so that mechanics can carry out major repairs and overhauling.

The Thai national carrier is currently involved in designing the expansion of the repair and maintenance centre which will cost about 300 million baht. The project is due for completion in three years. The facilities will include a new hangar which can accommodate three aircraft.

1	South Korea	1,451	1
2	Indonesia	559,176	9
3	Japan	61,478	216
4	Singapore	262,002	3
5	Pakistan	262,584	36
6	Laos	145,292	5
7	Burma	602,046	22
8	India	000,454	31
9	Netherlands	249,656	11
10	Soviet Union	880,030	1
11	Nepal	611,282	119
12	Greece		
13	Austria		
14	Italy		
15	France		
16	Luxembourg		
17	Jordan		
18	Iran		
19	Belgium		

Source: Department of Aviation

APPENDIX A : BILATERAL AIR AGREEMENTS

Bilateral Air Agreements between Thailand
and 62 Countries in 5 Continents During 1989

Country	Date Signed	Country	Date Signed
1. Sweden	23/11/49	32. Kuwait	27/04/76
2. Denmark	23/11/49	33. Poland	19/05/76
3. Norway	26/11/49	34. Laos	12/12/77
4. Sri Lanka	24/02/50	35. Vietnam	11/01/78
5. United Kingdom	10/11/50	36. Bangladesh	06/12/78
6. Philippines	27/04/53	37. Romania	30/03/79
7. Japan	19/06/53	38. Oman	05/06/79
8. Iceland	22/01/57	39. Spain	06/09/79
9. Australia	26/02/60	40. United States	07/12/79
10. West Germany	05/03/62	41. China	26/06/80
11. Malaysia	18/11/66	42. Bahrain	14/07/80
12. Switzerland	08/12/66	43. Egypt	29/10/80
13. South Korea	07/07/67	44. Saudi Arabia	17/11/81
14. Indonesia	08/03/68	45. Finland	11/12/85
15. Israel	08/03/68	46. Canada	23/10/86
16. Singapore	02/09/68	47. Brunei	13/01/87
17. Pakistan	27/05/69	48. Turkey	04/02/87
18. Lebanon	03/07/69	49. New Zealand	04/03/87
19. Burma	15/08/69	50. Yugoslavia	21/05/87
20. India	19/12/69	51. Czechoslovakia	03/09/87
21. Netherlands	29/04/71	52. East Germany	N/A
22. Soviet Union	06/05/71	53. Maldives	N/A
23. Nepal	29/10/71	54. Malta	N/A
24. Greece	13/05/72	55. Mexico	N/A
25. Austria	11/04/73	56. United Arab Emirates	N/A
26. Italy	11/02/74	57. Qatar	N/A
27. France	11/04/75	58. Brazil	N/A
28. Luxemburg	16/04/75	59. Ethiopia	N/A
29. Jordan	01/08/75	60. Portugal	N/A
30. Iraq	04/08/75	61. Cambodia	N/A
31. Belgium	30/10/75	62. Bulgaria	N/A

Source: Department of Aviation

APPENDIX B : STATISTICAL TABLES

Table B-1

Importation of Engine-Powered Aircrafts (1970-1988)

Year	Aeroplanes		Helicopters	
	Baht	Unit	Baht	Unit
1970	21,375,956	8	4,398,139	2
1971	9,655,390	5	2,678,345	1
1972	24,753,077	3	16,479,216	1
1973	647,714,655	13	-	-
1974	952,039,235	3	-	-
1975	1,477,497,573	4	-	-
1976	682,562,500	1	-	-
1977	33,218,742	5	17,929,491	2
1978	176,993,276	5	1,154,172	2
1979	842,479,792	3	9,971,955	3
1980	4,936,329,065	8	-	-
1981	3,362,881,934	5	3,200,269	1
1982	141,915,800	-4	36,466,292	2
1983	-	-	5,362,541	1
1984	-	-	22,640,509	2
1985	2,338,219,661	5	13,464,000	1
1986	53,074,808	3	11,659,941	1
1987	7,929,002	2	1,830,888	2
1988	14,577,973,449	9	19,582,119	2

Source: Customs Department

Table B-2
Number of Imported Aeroplanes by Country (1970-1988)

Year	West Germany		Ireland	France	U S A	Australia	New Zealand		Canada	United Kingdom	Switzerland	Total
1970	-	-	-	-	3	3	2	-	-	-	-	8
1971	-	-	-	-	2	3	1	-	-	-	-	5
1972	-	-	-	-	7	-	-	-	2	-	-	3
1973	-	-	-	1	2	-	-	-	-	6	-	13
1974	-	-	1	-	3	-	-	-	-	-	-	3
1975	-	-	-	-	1	-	-	-	-	-	-	4
1976	-	-	-	-	5	-	-	-	-	-	-	15
1977	-	-	-	1	1	-	-	-	-	-	-	5
1978	-	-	-	2	6	-	-	1	-	2	-	3
1979	-	-	-	3	3	-	-	-	-	-	-	8
1980	-	-	-	-	-	-	-	-	-	-	-	5
1981	2	-	2	-	-	-	-	-	-	-	-	4
1982	-	-	-	-	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-	-	-	-	-
1984	-	-	1	2	-	-	-	-	-	-	-	5
1985	1	-	-	-	2	-	-	-	-	-	-	4
1986	-	-	-	3	5	1	-	-	-	-	-	15
1987	-	-	1	-	2	-	-	-	-	-	-	3
1988	-	-	1	-	5	-	-	-	-	-	-	9

Source: Customs Department

Table B-3
Value of Imported Aeroplanes by Country (1970-1988)

Year	(Value : Baht)										Total	
	West Germany	Ireland	France	U S A	Australia	New Zealand	Canada	United Kingdom	Switzerland			
1970	-	-	-	16,456,678	3,864,520	1,054,758	-	-	-	-	-	21,375,956
1971	-	-	-	7,391,975	2,263,415	-	-	-	-	-	-	9,655,390
1972	-	-	-	-	-	833,077	23,920,000	-	-	-	-	24,753,077
1973	-	-	-	13,336,555	-	-	-	634,378,100	-	-	-	647,714,655
1974	-	-	411,884,000	540,155,235	-	-	-	-	-	-	-	952,039,235
1975	-	622,751,220	-	854,746,353	-	-	-	-	-	-	-	1,477,497,573
1976	-	-	-	682,562,500	-	-	-	-	-	-	-	682,562,500
1977	-	-	-	-	-	-	-	-	33,218,742	-	-	33,218,742
1978	-	-	-	176,993,276	-	-	-	-	-	-	-	176,993,276
1979	-	-	622,153,630	217,827,532	-	-	-	-	-	-	-	842,479,792
1980	-	-	-	4,933,527,869	-	-	2,498,630	-	-	-	-	4,936,329,065
1981	-	-	2,009,652,389	1,353,229,545	-	-	-	2,801,196	-	-	-	3,362,881,934
1982	2,014,702	139,901,098	-	-	-	-	-	-	-	-	-	141,915,800
1983	-	-	-	-	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-	-	-	-	-
1985	-	131,741,313	2,204,365,286	2,113,062	-	-	-	-	-	-	-	2,338,219,661
1986	27,717,814	-	-	2,627,994	22,729,000	-	-	-	-	-	-	53,074,808
1987	-	-	-	7,929,002	-	-	-	-	-	-	-	7,929,002
1988	-	130,285,098	4,333,671,002	10,114,017,349	-	-	-	-	-	-	-	14,577,973,449

Source: Customs Department

Table B-4

Number of Imported Helicopters by Country (1970-1988)

Year	U S A	France	United Kingdom	Japan	Total
1970	2	-	-	-	2
1971	1	-	-	-	1
1972	-	-	-	1	1
1973	-	-	-	-	-
1974	-	-	-	-	-
1975	-	-	-	-	-
1976	-	-	-	-	-
1977	2	-	-	-	2
1978	2	-	-	-	2
1979	3	-	-	-	3
1980	-	-	-	-	-
1981	1	-	-	-	1
1982	2	-	-	-	2
1983	1	-	-	-	1
1984	2	-	-	-	2
1985	1	-	-	-	1
1986	-	1	-	-	1
1987	2	-	-	-	2
1988	-	1	1	-	2

Source: Customs Department

Source: Customs Department

TARA SIAM LIMITED

Table B-5

Value of Imported Helicopters by Country (1970-1988)

(Value : Baht)

Year	U S A	France	United Kingdom	Japan	Total
1970	4,398,139	-	-	-	4,398,139
1971	2,678,345	-	-	-	2,678,345
1972	-	-	-	16,479,215	16,479,215
1973	-	-	-	-	-
1974	-	-	-	-	-
1975	-	-	-	-	-
1976	-	-	-	-	-
1977	17,929,491	-	-	-	17,929,491
1978	1,154,172	-	-	-	1,154,172
1979	9,971,955	-	-	-	9,971,955
1980	-	-	-	-	-
1981	3,200,269	-	-	-	3,200,269
1982	36,466,292	-	-	-	36,466,292
1983	5,362,541	-	-	-	5,362,541
1984	22,640,509	-	-	-	22,640,509
1985	13,464,000	-	-	-	13,464,000
1986	-	11,659,941	-	-	11,659,941
1987	1,830,888	-	-	-	1,830,888
1988	-	19,206,000	376,119	-	19,582,119

Source: Customs Department

Table B-6

Importation of Un-Powered Aircrafts (1970-1988)

Year	Balloons		Gliders and Ground Flying Trainers		Parachutes		Catapult	
	Baht	Unit	Baht	Unit	Baht	Unit	Baht	Unit
1970	55,224	2,050	1,512,711	90	-	-	-	-
1971	-	-	-	-	-	-	2,821,851	1
1972	10,816	800	2,005,117	128	13,223	26	208,000	1
1973	-	-	570,938	1	339,031	278	521,791	1
1974	-	-	-	-	16,440	2	-	-
1975	101,858	1	-	-	53,418	5	-	-
1976	31,413	1,150	-	-	32,701	9	-	-
1977	58,545	2,200	-	-	72,734	10	-	-
1978	95,374	3,751	1,060,701	2	264,480	28	1,163,227	1
1979	146,321	5,101	-	-	52,567	14	-	-
1980	151,168	6,800	-	-	58,471	5	100,894,855	2
1981	199,415	6,380	308,591,948	1	528,138	120	3,447,250	1
1982	32,012	900	142,780,908	2	2,265,105	96	8,520	1
1983	24,974	500	-	-	531,477	20	-	-
1984	821,553	402	355,241,035	1	-	-	1,897,808,900	2
1985	35,915	451	-	-	4,522,176	142	5,291,922	6
1986	3,948,076	1,803	574,048	20	4,422,086	346	530,067	8
1987	411,290	2,533	452,718	25	12,157,260	621	-	-
1988	1,070,836	2,707	774,486,381	1,979	488,540	188	-	-

Source: Customs Department

Table B-7

Number of Imported Balloons by Country (1970-1988)

(Unit)

Year	Japan	U. S. A	France	United Kingdom	West Germany	Total
1970	2,050	-	-	-	-	2,050
1971	-	-	-	-	-	-
1972	800	-	-	-	-	800
1973	-	-	-	-	-	-
1974	-	-	-	-	-	-
1975	-	1	-	-	-	1
1976	950	200	-	-	-	1,150
1977	2,200	-	-	-	-	2,200
1978	3,750	1	-	-	-	3,751
1979	5,100	1	-	-	-	5,101
1980	6,800	-	-	-	-	6,800
1981	6,380	-	-	-	-	6,380
1982	900	-	-	-	-	900
1983	500	-	-	-	-	500
1984	400	2	-	-	-	402
1985	450	1	-	-	-	451
1986	1,400	-	400	3	-	1,803
1987	2,500	-	32	-	1	2,533
1988	2,600	107	-	-	-	2,707

Source: Customs Department

Table B-8

Value of Imported Balloons by Country (1970-1988)

(Unit)

(Value : Baht)

Year	Japan	U S A	France	United Kingdom	West Germany	Total
1970	55,224	-	-	-	-	55,224
1971	-	-	-	-	-	-
1972	10,896	-	-	-	-	10,816
1973	-	-	-	-	-	-
1974	-	-	-	-	-	-
1975	-	101,858	-	-	-	101,858
1976	26,354	5,059	-	-	-	31,413
1977	58,545	-	-	-	-	58,545
1978	76,997	18,377	-	-	-	95,374
1979	113,584	32,737	-	-	-	146,321
1980	151,168	-	-	-	-	151,168
1981	199,415	-	-	-	-	199,415
1982	32,012	-	-	-	-	32,012
1983	24,974	-	-	-	-	24,974
1984	15,354	806,199	-	-	-	821,553
1985	18,439	17,476	-	-	-	35,915
1986	88,456	-	23,762	3,835,858	-	3,948,076
1987	219,587	-	9,171	-	182,532	411,290
1988	291,349	779,487	-	-	-	1,070,836

Source: Customs Department

Source: Customs Department

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Table B-9

Number of Imported Gliders and Ground Flying Trainers by Country (1970-1988)

Year	Ireland	U S A	Hong Kong	Japan	United Kingdom	France	Netherlands	Australia	Total
1970	-	10	-	-	80	-	-	-	90
1971	-	-	-	-	-	-	-	-	-
1972	-	128	-	-	-	-	-	-	128
1973	-	1	-	-	-	-	-	-	1
1974	-	-	-	-	-	-	-	-	-
1975	-	-	-	-	-	-	-	-	-
1976	-	-	-	-	-	-	-	-	-
1977	-	-	-	-	-	-	-	-	-
1978	-	-	-	-	-	-	-	2	2
1979	-	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-	-
1981	-	1	-	-	-	-	-	-	1
1982	2	-	-	-	-	-	-	-	2
1983	-	-	-	-	-	-	-	-	-
1984	1	-	-	-	-	-	-	-	1
1985	-	-	-	-	-	-	-	-	-
1986	-	2	17	1	-	-	-	-	20
1987	-	24	-	-	1	-	-	-	25
1988	-	344	-	3	1,580	15	37	-	1,979

Source: Customs Department

Table B-10
Value of Imported Gliders and Ground Flying Trainers by Country (1970-1988)

(Value : Baht)

Year	Ireland	U S A	Hong Kong	Japan	United Kingdom	France	Netherlands	Australia	Total
1970	-	1,472,640	-	-	40,071	-	-	-	1,512,711
1971	-	-	-	-	-	-	-	-	-
1972	-	2,005,117	-	-	-	-	-	-	2,005,117
1973	-	570,938	-	-	-	-	-	-	570,938
1974	-	-	-	-	-	-	-	-	-
1975	-	-	-	-	-	-	-	-	-
1976	-	-	-	-	-	-	-	-	-
1977	-	-	-	-	-	-	-	-	-
1978	-	-	-	-	-	-	-	-	-
1979	-	-	-	-	-	-	-	1,060,701	1,060,701
1980	-	-	-	-	-	-	-	-	-
1981	-	308,591,948	-	-	-	-	-	-	308,591,948
1982	142,780,908	-	-	-	-	-	-	-	142,780,908
1983	-	-	-	-	-	-	-	-	-
1984	355,241,035	-	-	-	-	-	-	-	355,241,035
1985	-	-	-	-	-	-	-	-	-
1986	-	531,309	29,756	12,983	-	-	-	-	574,048
1987	-	20,088	-	-	432,630	-	-	-	452,718
1988	-	2,169,810	-	6,000	772,030,338	236,885	43,348	-	774,486,381

Source: Customs Department

Table B-11

Number of Imported Parachutes by Country (1970-1988)

(Value : Baht)

(Unit)

Year	U S A	Japan	Canada	United Kingdom	West Germany	Australia	Total
1970	-	-	-	-	-	-	-
1971	-	-	-	-	-	-	-
1972	26	-	-	-	-	-	26
1973	276	2	-	-	-	-	278
1974	1	-	1	-	-	-	2
1975	1	-	4	-	-	-	5
1976	9	-	-	-	-	-	9
1977	10	-	-	-	-	-	10
1978	26	-	-	2	-	-	28
1979	14	-	-	-	-	-	14
1980	5	-	-	-	-	-	5
1981	120	-	-	-	-	-	120
1982	96	-	-	-	-	-	96
1983	20	-	-	-	-	-	20
1984	-	-	-	-	-	-	-
1985	142	-	-	-	-	-	142
1986	335	-	-	-	11	-	346
1987	571	-	-	68	-	2	621
1988	188	-	-	-	-	-	188

Source: Customs Department

Table B-12

Value of Imported Parachutes by Country (1970-1988)

Year	U S A	Japan	Canada	United Kingdom	West Germany	Australia	Total
1970	-	-	-	-	-	-	-
1971	-	-	-	-	-	-	-
1972	13,223	-	-	-	-	-	13,223
1973	395,336	3,695	-	-	-	-	339,031
1974	7,306	-	9,134	-	-	-	16,440
1975	13,214	-	40,204	-	-	-	53,418
1976	32,701	-	-	-	-	-	32,701
1977	72,734	-	-	-	-	-	72,734
1978	254,676	-	-	9,804	-	-	264,480
1979	52,567	-	-	-	-	-	52,567
1980	58,471	-	-	-	-	-	58,471
1981	528,138	-	-	-	-	-	528,138
1982	2,265,105	-	-	-	-	-	2,265,105
1983	531,477	-	-	-	-	-	531,477
1984	-	-	-	-	-	-	-
1985	4,522,176	-	-	-	-	-	4,522,176
1986	4,040,290	-	-	-	381,796	-	4,422,086
1987	11,940,001	-	-	19,823	-	197,436	12,157,260
1988	488,540	-	-	-	-	-	488,540

Source: Customs Department

Table B-13

Number of Imported Catapults by Country (1970-1988)

(Unit)

Year	United Kingdom	U S A	France	Hong Kong	Total
1970	-	-	-	-	-
1971	1	-	-	-	1
1972	-	1	-	-	1
1973	-	1	-	-	1
1974	-	-	-	-	-
1975	-	-	-	-	-
1976	-	-	-	-	-
1977	-	-	-	-	-
1978	-	1	-	-	1
1979	-	-	-	-	-
1980	-	1	1	-	2
1981	-	-	1	-	1
1982	-	-	1	-	1
1983	-	-	-	-	-
1984	-	2	-	-	2
1985	5	1	-	-	6
1986	3	-	-	5	8
1987	-	-	-	-	-
1988	-	-	-	-	-

Source: Customs Department

Table B-14

Value of Imported Catapults by Country (1970-1988)

(Value : Baht)

Year	United Kingdom	U S A	France	Hong Kong	Total
1970	-	-	-	-	-
1971	2,821,851	-	-	-	2,821,851
1972	-	208,000	-	-	208,000
1973	-	521,791	-	-	521,791
1974	-	-	-	-	-
1975	-	-	-	-	-
1976	-	-	-	-	-
1977	-	-	-	-	-
1978	-	1,163,227	-	-	1,163,227
1979	-	-	-	-	-
1980	-	40,442,490	60,472,365	-	100,894,855
1981	-	-	3,447,250	-	3,447,250
1982	-	-	8,520	-	8,520
1983	-	-	-	-	-
1984	-	1,897,808,900	-	-	1,897,808,900
1985	126,373	5,165,549	-	-	5,291,922
1986	499,829	-	-	30,238	530,067
1987	-	-	-	-	-
1988	-	-	-	-	-

Source: Customs Department

Table B-15

Number of Imported Engines by Country (1970-1988)

(Unit)

Year	United									Total
	U S A	Isreal	Taiwan	Kingdom	Japan	Singapore	Australia	Canada	France	
1970	1	-	-	-	-	-	-	-	-	1
1971	16	2	3	5	-	-	-	-	-	26
1972	-	-	-	-	-	-	-	-	-	-
1973	-	-	-	-	200	-	-	-	-	200
1974	17	-	-	-	3	-	-	-	-	20
1975	3	-	-	-	-	-	-	-	-	3
1976	6	-	-	-	-	1	-	-	-	7
1977	13	-	2	-	-	-	-	-	-	15
1978	13	-	-	-	-	-	-	-	-	13
1979	21	-	-	-	-	4	2	-	-	27
1980	4	-	-	-	-	-	-	2	-	6
1981	-	-	-	-	16	-	-	-	-	16
1982	7	-	-	-	-	-	-	-	-	7
1983	-	-	-	-	-	-	-	-	-	-
1984	1	-	-	-	-	-	-	-	-	1
1985	15	-	-	-	-	-	-	1	-	16
1986	-	-	-	-	-	-	-	1	-	1
1987	-	-	-	-	-	-	-	4	-	4
1988	-	-	-	-	-	-	-	-	-	-

Source: Customs Department

Table B-16

Value of Imported Engines by Country (1970-1988)

(Value : Baht)

Year	U S A	Isreal	Taiwan	United Kingdom	Japan	Singapore	Australia	Canada	France	Total
1970	98,342	-	-	-	-	-	-	-	-	98,342
1971	2,275,717	211,848	370,760	478,459	-	-	-	-	-	3,336,784
1972	-	-	-	-	-	-	-	-	-	-
1973	-	-	-	-	469,917	-	-	-	-	469,917
1974	5,159,054	-	-	-	297,809	-	-	-	-	5,456,863
1975	531,563	-	-	-	-	-	-	-	-	531,563
1976	1,482,786	-	-	-	-	248,220	-	-	-	1,731,006
1977	4,791,323	-	692,750	-	-	-	-	-	-	5,484,073
1978	4,228,450	-	-	-	-	-	-	-	-	4,228,450
1979	6,102,023	-	-	-	-	656,014	825,365	-	-	7,583,402
1980	1,504,361	-	-	-	-	-	-	1,178,872	-	2,683,239
1981	-	-	-	-	63,459	-	-	-	-	63,459
1982	6,211,398	-	-	-	-	-	-	-	-	6,211,398
1983	-	-	-	-	-	-	-	-	-	-
1984	996,353	-	-	-	-	-	-	-	-	996,353
1985	31,147,010	-	-	-	-	-	-	-	8,260	31,155,270
1986	-	-	-	-	-	-	-	-	3,720,000	3,720,000
1987	-	-	-	-	-	-	-	-	364,921	364,921
1988	-	-	-	-	-	-	-	-	-	-

Source: Customs Department

Number of Imported Parts of Aeroplanes,
Helicopters, Balloons and Gliders by Country (1970-1988)

(Unit : Kgs)

Country	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Singapore	-	-	-	-	35	463	1,109	-	3,595	574
Denmark	-	-	220	1,440	363	-	11	366	8	492
West Germany	8,371	-	-	4,471	-	30	-	-	-	-
United Kingdom	11,738	26,980	45,806	34,619	31,222	20,546	7,598	6,835	898	1,383
U S A	37,052	54,459	34,767	82,131	76,440	298,806	80,706	120,947	94,029	32,605
Australia	6	1,728	1,569	2	925	14	2	42	-	-
Japan	1,333	1,983	1,227	8	47	-	-	-	34	-
Entry for Sundry	-	-	-	-	-	-	-	-	-	-
Austria	-	-	-	-	-	-	-	-	-	-
France	8,077	-	-	-	-	7,982	-	-	-	294
Switzerland	-	-	-	-	-	-	-	-	-	-
Hong Kong	692	360	-	-	-	122	78	-	11	-
Indonesia	-	-	-	-	-	-	-	-	247	4,940
Italy	870	-	-	653	708	244	126	407	3	1,378
New Zealand	22	1,555	278	4,670	-	259	361	95	46	28
Canada	-	-	-	-	1,075	12	-	361	-	-
Ireland	-	-	-	-	-	-	-	-	81	-
Sweden	60	678	-	-	-	-	-	-	-	-
Brazil	48	-	-	-	-	-	-	-	-	-
Taiwan	3	200	19	-	-	-	19	-	-	-
Luxembourg	6,400	-	1	-	-	-	-	-	-	-
Netherlands	-	2	-	4	7	-	-	-	-	3
Malaysia	-	-	-	-	-	-	118	-	-	-
South Korea	-	-	-	-	-	-	-	-	-	-
Saudi Arabia	-	-	-	-	-	-	-	-	-	-
Isreal	-	-	-	-	-	-	-	-	-	-
Philippines	-	-	-	-	-	-	-	-	-	-
Total	74,672	87,945	83,887	127,997	110,818	328,478	90,128	129,053	98,952	41,697

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(Unit : Kgs)

Country	1980	1981	1982	1983	1984	1985	1986	1987	1988
Singapore	895	485	6,506	27,217	828	5,668	3,053	18,946	6,503
Denmark	225	-	24	-	13	2	138	-	-
West Germany	-	-	200	5,270	3,361	9,453	84,647	12,650	34
United Kingdom	622	766	141	3,197	952	-	5,522	16	2,500
U S A	35,375	19,444	77,102	199,426	35,432	14,877	63,449	85,692	255,155
Australia	-	-	21,180	3,130	1,007	360	180	15	-
Japan	-	-	50	-	-	3,360	50	-	-
Entry for Sundry	-	-	271	53	215	-	-	-	-
Austria	-	-	-	1,115	17,930	-	-	-	-
France	-	-	-	53,369	-	192	497	8	-
Switzerland	158	1	-	1,040	-	-	-	-	-
Hong Kong	19	144	-	-	300	2,044	568	5,212	680
Indonesia	-	-	-	-	200	-	-	-	-
Italy	-	-	-	-	7,540	-	8	-	-
New Zealand	140	-	-	-	155	27	81	-	-
Canada	-	-	-	-	1,300	-	54	1,231	1
Ireland	-	-	-	-	-	15	-	-	-
Sweden	-	-	-	-	-	11	54	-	-
Brazil	474	-	-	-	-	-	-	-	-
Taiwan	-	-	-	-	-	-	-	-	-
Luxembourg	-	-	-	-	-	-	235	323	-
Netherlands	-	-	-	-	-	-	-	-	-
Malaysia	-	-	-	-	-	-	-	-	-
South Korea	-	4	-	-	-	-	-	-	-
Saudi Arabia	-	-	-	-	-	-	-	37	-
Isreal	-	-	-	-	-	-	-	-	1,590
Philippines	-	-	-	-	-	-	-	-	12
Total	37,912	20,844	105,474	293,817	69,233	36,009	158,536	124,130	266,475

Source: Customs Department

Value of Imported Parts of Aeroplanes,
Helicopters, Balloons and Gliders by Country (1970-1988)

(Value : Baht)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Singapore	-	-	-	-	55,199	651,402	696,094	-	3,630,347	55,112
Denmark	-	-	1,895	191,667	527,031	-	28,843	229,425	20,483	260,835
West Germany	189,707	-	-	76,356	-	98,932	-	-	-	-
United Kingdom	3,370,454	9,554,890	17,189,318	11,403,850	11,852,052	16,176,993	11,464,435	8,893,353	3,084,623	3,649,245
U S A	9,576,691	7,721,356	18,198,436	21,759,923	36,342,618	50,752,066	86,340,237	142,293,684	177,043,432	83,000,119
Australia	28,260	171,531	761,287	4,167	121,110	5,230	4,683	349,240	-	-
Japan	492,702	593,954	368,817	23,801	53,430	-	-	-	9,028	-
Entry for Sundry	-	-	-	-	-	-	-	-	-	-
Austria	-	-	-	-	-	-	-	-	-	-
France	469,631	-	-	-	-	41,408,433	-	-	-	131,594
Switzerland	-	-	-	-	-	-	-	-	169,350	-
Hong Kong	33,172	55,016	-	-	-	20,000	67,313	-	284,921	7,647,919
Indonesia	-	-	-	-	-	-	-	-	-	-
Italy	34,840	-	-	506,186	715,193	721,405	786,019	124,660	19,564	5,707,193
New Zealand	10,189	741,951	187,813	58,600	-	362,276	260,746	100,127	166,514	104,651
Canada	-	-	-	-	118,922	95,228	-	1,819,119	-	-
Ireland	-	-	-	-	-	-	-	-	245,410	-
Sweden	3,768	83,049	-	-	-	-	-	-	-	-
Brazil	7,186	-	-	-	-	-	-	-	-	-
Taiwan	981	10,400	7,560	-	-	-	8,045	-	-	-
Luxembourg	651,352	-	13,950	-	-	-	-	-	-	-
Netherlands	-	9,660	-	10,687	7,224	-	-	-	-	17,388
Malaysia	-	-	-	-	-	-	8,224	-	-	-
South Korea	-	-	-	-	-	-	-	-	-	-
Saudi Arabia	-	-	-	-	-	-	-	-	-	-
Isreal	-	-	-	-	-	-	-	-	-	-
Philippines	-	-	-	-	-	-	-	-	-	-
Total	14,868,933	18,941,807	36,729,076	34,035,237	49,792,689	110,291,965	99,668,643	153,809,610	184,673,672	100,574,056

TARA SIAM LIMITED

Country	1980	1981	1982	1983	1984	1985	1986	1987	1988
Singapore	912,981	2,394,782	9,031,954	37,842,227	1,476,523	11,307,487	9,692,157	32,574,655	22,438,657
Denmark	99,596	-	7,040	-	321,543	60,744	2,227,083	-	-
West Germany	-	-	14,885	5,523,511	7,119,704	56,325,759	464,213,192	4,814,085	25,110
United Kingdom	1,992,385	2,226,374	346,036	1,834,221	1,429,844	26,616	27,804,542	69,151	141,923
U S A	83,871,923	86,557,371	185,164,254	213,283,178	188,161,635	105,787,363	322,746,114	304,596,226	184,862,919
Australia	-	-	22,036,494	345,554,865	13,425,099	745,430	24,195	795	-
Japan	-	-	26,681	-	-	2,191,992	526,192	-	-
Entry for Sundry	-	-	234,478	221,410	2,768,543	-	-	-	-
Austria	-	-	-	4,078,580	7,622,897	-	-	-	-
France	-	-	-	57,277,778	-	6,769,832	2,661,105	2,219,925	-
Switzerland	971,287	11,386	-	1,406,787	-	-	-	-	-
Hong Kong	75,308	46,386	-	-	-	-	-	-	-
Indonesia	-	-	-	-	1,689,743	32,845,582	1,201,876	6,861,834	5,819,676
Italy	-	-	-	1,040	1,907,213	-	-	-	-
New Zealand	374,034	-	-	-	9,166,106	-	10,000	-	-
Canada	-	-	-	-	1,309,247	580,637	372,476	-	-
Ireland	-	-	-	-	1,603,788	-	30,672	7,477,005	10,806
Sweden	-	-	-	-	-	13,602	-	-	-
Brazil	214,942	-	-	-	-	160,217	277,303	-	-
Taiwan	-	-	-	-	-	-	-	-	-
Luxembourg	-	-	-	-	-	-	-	-	-
Netherlands	-	-	-	-	-	-	-	-	-
Malaysia	-	-	-	-	-	-	3,784,453	7,361,200	-
South Korea	-	-	-	-	-	-	-	-	-
Saudi Arabia	-	129,584	-	-	-	-	-	539,550	69,533,100
Israel	-	-	-	-	-	-	-	-	-
Philippines	-	-	-	-	-	-	-	-	2,516
Total	88,512,456	91,365,882	316,861,822	356,022,557	238,401,885	216,815,261	835,571,360	366,514,426	282,834,707

Source: Customs Department

Table B-19
Number of Imported Parts of Aircraft Engines by Country (1970-1988)

Country	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Japan	6,056	2,607	16,013	1,497	19	-	73	454	880	8,036	14,842	2,261	7,950	10,232	28,284	19,938	7,477	-	11,210
Austria	149	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-
West Germany	2,625	1,238	53	166	316	-	-	-	33	-	-	-	-	86	8	1,241	-	-	39,638
Italy	111	1,694	160	630	46	898	125	-	-	-	667	-	-	-	-	-	-	-	-
Netherlands	455	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-
Sweden	269	-	-	3	-	-	-	442	-	-	-	-	6	-	-	-	-	-	3
United Kingdom	2,067	2,184	608	979	-	132	60	74	4,980	-	74	1	6	1	-	-	1	-	688
U S A	3,670	3,614	2,637	82	592	349	23	66	956	40	250	1,784	42	2,538	5,454	3,134	6,961	294	1,102
Taiwan	-	2,100	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,817
Australia	-	46	-	-	-	-	-	-	-	-	-	26	-	-	-	-	-	-	680
India	-	-	1,170	-	-	-	-	-	-	14	-	-	-	-	-	-	-	-	-
Belgium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Singapore	-	-	-	-	-	-	-	-	-	-	-	-	-	530	-	-	-	-	2,523
Switzerland	-	-	-	-	-	-	-	-	-	-	-	-	-	260	-	-	-	-	192
Canada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	263	-	-	-	-
New Zealand	-	-	-	-	-	-	-	-	-	-	-	-	-	-	118	-	-	-	-
Malaysia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
France	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	954
Czechoslovakia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/A	-	-	-
Total	15,402	13,483	21,641	3,357	973	1,379	281	1,076	6,849	8,090	15,833	4,071	8,002	13,647	34,195	24,313	14,439	294	58,807

Source: Customs Department

TARA SIAM LIMITED

Table B-20

Value of Imported Parts of Aircraft Engines by Country (1970-1988)

(Value : Baht)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Japan	252,745	238,936	6,137,840	286,075	1,961	-	24,582	61,208	45,876	74,442
Austria	10,939	-	-	-	-	-	-	-	-	-
West Germany	284,060	124,501	6,649	47,777	198,554	-	-	-	28,571	-
Italy	11,159	48,473	16,491	316,100	81,529	1,320,435	29,123	-	-	-
Netherlands	16,455	-	-	-	-	-	-	-	-	-
Sweden	13,701	-	-	2,245	-	-	-	159,271	-	-
United Kingdom	200,339	210,596	878,067	709,347	-	28,400	11,579	24,834	783,942	-
U S A	494,903	293,605	262,385	87,600	76,900	35,753	6,169	521,976	240,640	135,977
Taiwan	-	43,983	188,928	-	-	-	-	-	-	-
Australia	-	43,963	-	-	-	-	-	-	-	-
India	-	-	62,387	-	-	-	-	-	-	-
Belgium	-	-	-	-	-	-	-	-	-	8,253
Singapore	-	-	-	-	-	-	-	-	-	-
Switzerland	-	-	-	-	-	-	-	-	-	-
Canada	-	-	-	-	-	-	-	-	-	-
New Zealand	-	-	-	-	-	-	-	-	-	-
Malaysia	-	-	-	-	-	-	-	-	-	-
France	-	-	-	-	-	-	-	-	-	-
Czechoslovakia	-	-	-	-	-	-	-	-	-	-
Total	1,284,301	1,004,057	7,552,747	1,449,144	358,944	1,384,588	71,453	767,289	1,099,029	218,672

(Value : Baht)

Country	1980	1981	1982	1983	1984	1985	1986	1987	1988
Japan	783,100	1,310,829	119,141	703,257	1,511,553	2,803,702	616,296	-	83,110,578
Austria	-	-	-	-	24,208	-	-	-	-
West Germany	-	-	-	1,221,606	106,529	13,104,947	-	-	13,529,142
Italy	206,457	-	-	-	-	-	-	-	-
Netherlands	-	-	3,611	-	-	-	-	-	6,706
Sweden	-	-	-	-	-	-	-	-	-
United Kingdom	50,579	-	8,613	20,273	-	-	17,619	-	634,043
U S A	1,842,127	3,997,524	19,546	4,864,108	5,396,440	2,988,335	45,048,108	786,569	567,295
Taiwan	-	-	-	-	-	-	-	-	200,315
Australia	-	37,690	-	-	-	-	-	-	92,304
India	-	-	-	-	-	-	-	-	-
Belgium	-	-	-	-	-	-	-	-	-
Singapore	-	-	-	1,013,363	-	-	-	-	4,811,307
Switzerland	-	-	-	1,803,223	-	-	-	-	1,268,725
Canada	-	-	-	-	2,204,212	-	-	-	-
New Zealand	-	-	-	-	1,065,964	-	-	-	-
Malaysia	-	-	-	-	-	-	-	-	135,403
France	-	-	-	-	-	1,283	-	-	-
Czechoslovakia	-	-	-	-	1,117	-	-	-	-
Total	2,882,263	5,346,043	150,911	9,625,830	10,310,023	18,898,267	45,682,023	786,569	104,355,818

Source: Customs Department

Table B-21

Number of Imported Parts of
Parachutes by Country (1970-1988)

(Unit : Kgs)

Year	Japan	New Zealand	U S A	South Korea	Singapore	West Germany	Total
1970	15,515	4,374	-	-	-	-	19,889
1971	-	-	22	-	-	-	22
1972	-	-	35	-	-	-	35
1973	-	-	1	-	-	-	1
1974	-	-	1,661	-	-	-	1,661
1975	-	-	356	-	-	-	356
1976	-	-	8	-	-	-	8
1977	-	-	24	-	-	-	24
1978	-	-	391	-	-	-	391
1979	-	-	-	-	-	-	-
1980	-	-	5	139	-	-	144
1981	-	-	9	4,052	90	-	4,151
1982	-	-	5,755	12,480	-	-	18,235
1983	-	-	33	1,789	-	-	1,822
1984	-	-	3,851	-	293	-	4,144
1985	-	-	530	-	-	618	1,148
1985	-	-	197	292	-	-	489
1987	-	-	2,959	-	-	202	3,161
1988	-	-	1,921	115	-	-	2,036

Source: Customs Department

Table B-22

Value of Imported Parts of Parachutes by Country (1970-1988)

(Value : Baht)

Year	Japan	New Zealand	U S A	South Korea	Singapore	West Germany	Total
1970	319,016	39,918	-	-	-	-	358,934
1971	-	-	7,541	-	-	-	7,541
1972	-	-	26,501	-	-	-	26,501
1973	-	-	4,036	-	-	-	4,036
1974	-	-	508,923	-	-	-	508,923
1975	-	-	224,939	-	-	-	224,939
1976	-	-	5,159	-	-	-	5,159
1977	-	-	16,703	-	-	-	16,703
1978	-	-	84,413	-	-	-	84,413
1979	-	-	-	-	-	-	-
1980	-	-	15,716	99,768	-	-	115,484
1981	-	-	43,852	1,988,427	2,245	-	2,034,524
1982	-	-	2,863,653	3,219,706	-	-	6,083,359
1983	-	-	37,537	952,130	-	-	989,667
1984	-	-	3,566,798	-	234,053	-	3,800,851
1985	-	-	1,160,266	-	-	1,292,525	2,452,791
1986	-	-	1,016,803	23,755	-	-	1,040,538
1987	-	-	1,723,042	-	-	138,464	1,861,506
1988	-	-	1,885,560	18,918	-	-	1,904,478

Source: Customs Department

Japan	1,841,127	3,997,524	19,546	4,864,108	3,396,440	2,988,335	45,018,316	786,368	104,345,618
Austria	-	-	-	-	-	-	-	-	-
West Germany	-	-	1,221,406	104,329	23,104,967	-	-	-	12,720,342
Italy	256,457	-	-	-	-	-	-	-	-
Netherlands	-	3,611	-	-	-	-	-	-	6,704
Sweden	-	-	-	-	-	-	-	-	-
United Kingdom	50,379	8,613	20,779	-	-	17,619	-	-	62,001
U S A	1,841,127	3,997,524	19,546	4,864,108	3,396,440	2,988,335	45,018,316	786,368	104,345,618
Taiwan	-	-	-	-	-	-	-	-	200,315
Australia	-	37,490	-	-	-	-	-	-	62,324
India	-	-	-	-	-	-	-	-	-
Belgium	-	-	-	-	-	-	-	-	-
Singapore	-	-	1,013,263	-	-	-	-	-	1,811,307
Switzerland	-	-	1,603,233	-	-	-	-	-	1,208,721
Canada	-	-	-	7,204,317	-	-	-	-	-
New Zealand	-	-	-	1,665,964	-	-	-	-	-
Malaysia	-	-	-	-	-	-	-	-	134,400
France	-	-	-	-	1,280	-	-	-	-
Denmark	-	-	-	-	-	-	-	-	1,127
Total	2,862,343	3,348,043	150,311	9,695,830	10,310,093	18,808,267	45,018,316	786,368	104,345,618

Source: Customs Department

Table B-23

Number of Imported Parts of Catapults by Country (1970-1988)

(Unit : Kgs)

Year	U S A	Japan	United Kingdom	France	Canada	West Germany	Hong Kong	Total
1970	18	-	-	-	-	-	-	18
1971	9	43	-	-	-	-	-	52
1972	-	-	-	-	-	-	-	-
1973	86	-	-	-	-	-	-	86
1974	-	-	-	-	-	-	-	-
1975	-	-	-	-	-	-	-	-
1976	4	-	-	-	-	-	-	4
1977	-	-	-	-	-	-	-	-
1978	95	-	1	-	-	-	-	96
1979	440	-	1	20	-	-	-	461
1980	1,572	-	3,074	45	-	-	-	4,691
1981	2	-	-	-	-	-	-	2
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	17	-	2	N/A	-	-	-	19
1985	178	-	149	8	-	-	-	335
1985	152	-	364	9	34	1	211	771
1987	205	3	84	N/A	-	24	3	319
1988	203	28	17	-	-	3	-	252

Source: Customs Department

1. International airports	47,728,500
2. Improvement and Development of the Air Safety and Air Transport Control Work	133,014,900
3. Telecommunications	4,795,600
4. Department of Post and Telegraph	16,272,800

Source: Bureau of the Budget

TARA SIAM LIMITED

Table B-24

Value of Imported Parts of Catapults by Country (1970-1988)

(Value : Baht)

	U S A	Japan	United Kingdom	France	Canada	West Germany	Hong Kong	Total
1970	3,848	-	-	-	-	-	-	3,848
1971	11,766	45,001	-	-	-	-	-	56,767
1972	-	-	-	-	-	-	-	-
1973	54,450	-	-	-	-	-	-	54,450
1974	-	-	-	-	-	-	-	-
1975	-	-	-	-	-	-	-	-
1976	43,735	-	-	-	-	-	-	43,735
1977	-	-	-	-	-	-	-	-
1978	90,904	-	619	-	-	-	-	91,523
1979	3,482,984	-	50,142	344,419	-	-	-	3,877,545
1980	529,943	-	5,767,740	141,493	-	-	-	6,439,176
1981	8,478	-	-	-	-	-	-	8,478
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	82,695	-	30,686	24,861	-	-	-	136,242
1985	761,406	-	1,439,728	98,469	-	-	-	2,299,603
1986	640,296	-	4,058,074	312,719	54,881	7,124	80,680	5,153,774
1987	3,283,190	8,378	1,807,867	250,237	-	941,841	100,786	6,392,299
1988	3,876,666	15,417,416	37,628,292	-	-	29,947,738	-	86,911,163

Source: Customs Department

Table B-25

Government Budget in 1990

MINISTRY OF AGRICULTURE AND COOPERATIVES		
Project	Organization in Charge	Budget (Baht)
Rain Making Operation	Office of the Permanent Secretary	47,013,200
Other Agricultural Aviation	Office of the Permanent Secretary	274,558,200

MINISTRY OF TRANSPORT AND COMMUNICATIONS		
Project	Organization in Charge	Budget (Baht)
<u>Air Transportation</u>	Department of Aviation	
A. Airport Development		
1. Domestic airports		
- Ubon Ratchathani		132,200,000
- Chiang Rai		148,004,100
- Sakon Nakhon		47,726,500
- Khon Kaen		4,300,000
- Phitsanulok		27,250,000
- Buri Ram		1,800,000
2. International airports		
- Phuket		4,586,300
- U-Tapao		133,014,900
B. Improvement and Development of the Air Safety and Air Transport Control Work		573,731,200
<u>Telecommunications</u>	Department of Post and Telegraph	
Radio Frequency Management		4,796,600
Inspection and Control		16,272,800

Source: Bureau of the Budget

Table B-26
Operational Performance of Thai Airways International Ltd, 1974-1988

Transportation Activities	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88
Number of Aircraft	11	11	13	11	14	18	21	21	20	23	20	24	26	41
Flight Hours (Airborne Hours/Year)	28,701	33,158	33,358	34,478	38,265	45,479	50,157	55,826	58,618	60,578	64,630	71,893	77,418	100,686
Available Ton-Kms (Million)	431	609	633	749	866	1,172	1,446	1,659	1,761	1,823	1,973	2,244	2,371	2,894
Revenue Ton-Kms (Million)	253	361	377	480	559	743	888	1,034	1,100	1,195	1,323	1,419	1,603	1,968
Load Factor (%)	58.8	59.2	59.6	64.0	64.6	63.4	61.4	62.4	62.5	65.6	67.0	63.2	67.6	68.0
Number of Passengers ('000)	1,168	1,316	1,321	1,282	1,554	1,845	2,186	2,403	2,506	2,635	2,924	3,112	3,549	5,136
Available Seat-Kms (Million)	3,638	4,992	5,168	5,877	6,483	8,824	11,299	12,903	13,609	13,806	14,776	16,310	17,414	21,493
Revenue Passenger-Kms (Million)	2,212	3,025	3,095	3,782	4,252	5,590	6,904	7,928	8,461	8,813	9,835	10,317	12,102	15,194
Cabin Factor (%)	60.8	60.6	59.9	64.4	65.6	63.3	61.1	61.4	62.2	63.8	66.6	63.3	69.5	70.7
Available Freight Ton-Kms (Million)	104	160	168	220	283	378	429	498	536	580	591	773	802	1,004
Number of Personnel	3,832	4,631	5,096	5,558	6,571	7,351	7,731	8,452	8,928	9,623	10,624	11,051	11,403	13,893
Profitability [Result before Tax] (Million Baht)	138.5	98.2	116.3	480.5	515.9	106.7	39.1	26.3	647.7	2,126.7	1,001.1	1,496.7	2,192.5	6,522.1
Catering Revenue (Million Baht)	207.4	229.0	264.4	358.2	452.0	592.0	665.5	771.7	845.6	875.4	921.8	1,014.7	1,196.9	1,470.2
Flight Kitchen [Only] (Million Baht)	186.5	204.8	239.1	322.7	408.0	533.1	592.9	701.9	762.2	792.1	835.7	902.6	1,065.6	1,279.1

APPENDIX C : AIRCRAFT DETAILS (AS AT MARCH 1990)

I. Government Agencies

Registration	Mark	Date	Type	Serial Number	Type of Engine	Maximum Take-Off Weight	Status	Number of Seats
1. Civil Aviation Training Centre of Thailand, Department of Aviation (Total 20 Aircraft)								
HS-TCV		15/03/62	Cessna 150B	15059413	Continental O-200-A	1,500 lbs	Purchased	2
HS-TCW		15/03/62	Cessna 150B	15059419	Continental O-200-A	1,500 lbs	Purchased	2
HS-TCO		04/12/70	Airtourer T6/24	B560	Lycoming O-320-D1A	1,850 lbs	Purchased	2
HS-TCL		15/03/71	Airtourer T6/24	B563	Lycoming O-320-D1A	1,850 lbs	Purchased	2
HS-TCR		05/07/72	Piper PA-23 AZTEC	27-4372	Lycoming 10540C4B5	2,245 kgs	Purchased	6
HS-TCP		21/02/74	Beechcraft B-55	TC-1330	Continental 10-46C-L	5,100 lbs	Purchased	6
			Baron					
HS-TCT		17/04/76	Cessna 150B	15059412	Continental O-200-A	1,500 lbs	Purchased	2
HS-TCK		7/10/76	Cessna 150B	15078341	Continental O-200-A	1,600 lbs	Purchased	2
HS-TCS		05/10/77	Cessna 150B	15079362	Continental O-200-A	1,600 lbs	Purchased	2
HS-TCA		15/04/80	Piper PA-44 180	44-7995328	Lycoming O-360-E1A6D	3,800 lbs	Purchased	4
			Seminole					
HS-TCB		14/08/81	Piper PA-44 180	44-8195016	Lycoming O-360-E1A6D	3,800 lbs	Purchased	4
			Seminole					
HS-TCU		24/08/81	Piper Tomahawk	38-79A0317	Lycoming O-2350L2C	1,670 lbs	Purchased	2
			PA-3B-112					
HS-TCE		11/10/85	Cessna A152	15286001	Avco Lycoming O-235-N2C	1,670 lbs	Purchased	2
HS-TCD		11/10/85	Cessna 152	15286008	Avco Lycoming	1,670 lbs	Purchased	2
HS-TCF		22/05/87	Piper Seneca III	3433037	Lysio 360-KB6	4,750 lbs	Purchased	6
HS-TZB		05/06/87	Hillier UH-12E	2294	Lycoming VO 540-C2A	2,800 lbs	Purchased	3
HS-TZD		05/06/87	Hillier UH-12E	2296	Lycoming VO 540-C2A	2,800 lbs	Purchased	3
HS-TZF		05/06/87	Hillier UH-12E	2344	Lycoming VO 540-C2A	2,800 lbs	Purchased	3
HS-TZC		11/06/87	Hillier UH-12E	2295	Lycoming VO 540-C2A	2,800 lbs	Purchased	3
HS-TZE		11/06/87	Hillier UH-12E	2312	Lycoming VO 540-C2A	2,800 lbs	Purchased	3

Registration	Mark	Date	Type	Serial Number	Type of Engine	Maximum Take-Off Weight	Status	Number of Seats
2. Department of Aviation (Total 2 Aircraft)								
HS-FFI	13/07/79	Beech A200	BB-132		Pratt & Whitney PT GA41 750 BHP	5,678 kgs	Purchased	8
HS-DOA	04/12/84	Skyvan Variant 100	SH-1906		Garrett Airresearch TPE331-2-201A	6,123 kgs	Purchased	18
3. Electricity Generating Authority of Thailand (Total 4 Aircraft)								
HS-YEB	01/06/76	Piper PA-31-NAVAJO	31-420		Lycoming TIO-540-A2C	2,900 kgs	Purchased	8
HS-YHC	15/02/79	Bell Helicopter 206B Jet Ranger	2429		Allison 250-20B	1,363.6 kgs	Purchased	5
HS-YHD	25/05/84	Bell Helicopter 206 L-3 Long Ranger III	51071		Allison 250-C30P	1,818 kgs	Purchased	7
HS-YHB	08/11/85	Bell Helicopter 206 Jet Ranger III	3855		Allison 250-C20J	1,363.6 kgs	Purchased	5
4. The Institute of Technology and Vocational Education (Total 1 Aircraft)								
HS-TNA	09/03/88	Cessna 150M	150-77208		Continental O-200A	1,600 lbs	Purchased	2

Registration		Date	Type	Serial Number	Type of Engine	Maximum Take-Off Weight	Status	Number of Seats
Mark								
5. Thai Airways International Limited (Total 52 Aircraft)								
HS-TGK	15/12/77	A300B4-103	35	General Electric CF6-50C2	157,500 kgs	Purchased	259	
HS-TML	21/08/89	A300B4-103	54	General Electric CF6-50C2	157,500 kgs	Purchased	259	
HS-TMN	21/09/89	A300B4-103	55	General Electric CF6-50C2	157,500 kgs	Purchased	259	
HS-TGP	09/08/79	A300B4-103	84	General Electric CF6-50C2	157,500 kgs	Purchased	259	
HS-TGR	06/09/79	A300B4-103	85	General Electric CF6-50C2	157,500 kgs	Purchased	259	
HS-TGA	02/11/79	B747-2D7B	21782	General Electric CF6-50E2	371,945 kgs	Purchased	377	
HS-TGB	15/12/79	B747-2D7B	21783	General Electric CF6-50E2	371,945 kgs	Purchased	377	
HS-TGC	23/02/80	B747-2D7B	21784	General Electric CF6-50E2	371,945 kgs	Purchased	377	
HS-TGT	18/05/81	A300B4-203	141	General Electric CF6-50C2	165,000 kgs	Purchased	259	
HS-TMW	27/09/89	A300B4-203	149	General Electric CF6-50C2	165,000 kgs	Purchased	259	
HS-TGS	01/06/84	B747-2D7B	22472	General Electric CF6-50E2	371,945 kgs	Purchased	378	
HS-TGX	07/03/85	A300B4-203	249	General Electric CF6-50C2	165,000 kgs	Lease-purchased	238	
HS-TGY	28/03/85	A300B4-203	265	General Electric CF6-50C2	165,000 kgs	Lease-purchased	238	
HS-TAA	26/09/85	A300-600	368	General Electric CF6-80C2	165,000 kgs	Purchased	263	
HS-TAB	30/09/85	A300-600	371	General Electric CF6-80C2	165,000 kgs	Purchased	263	
HS-TAC	06/12/85	A300-600	377	General Electric CF6-80C2-A1	165,000 kgs	Lease-purchased	263	
HS-TAD	03/02/86	A300-600	384	General Electric CF6-80C2-A1	165,000 kgs	Lease-purchased	267	
HS-TAE	09/10/86	A300-600	395	General Electric CF6-80C2-A1	165,000 kgs	Lease-purchased	267	
HS-TGF	25/11/86	D747-2D7B	22337	General Electric CF6-50E2	371,945 kgs	Purchased	377	
HS-TGG	25/11/86	D747-2D7B	22471	General Electric CF6-50E2	371,945 kgs	Purchased	377	
HS-TAF	18/12/86	A300-600	398	General Electric CF6-80C2-A1	165,000 kgs	Lease-purchased	267	
HS-TMM	18/09/89	A300G4-203	33	General Electric CF6-50C2	165,000 kgs	Purchased	223	
HS-TMA	01/12/87	DC-10-30ER	48267	General Electric CF6-50C2	267,200 kgs	Purchased	255	
HS-TGE	03/12/87	B747-3D7	23722	General Electric CF6-80C2-B1	377,842 kgs	Purchased	423	

HS-TSE	14/07/89	Crj440	37	General Electric C550	26,000 kgs	Purchased	4
HS-TSZ	18/07/89	Accumbate 35-40	92	Lycoming IO-540	1,400 kgs	Purchased	4
HS-A01	31/07/89	Crj440 P-212R	2210-0201	2550-523	1,785.71 kgs	Purchased	6
HS-A02	30/10/89	Boeing B 20 J	24-164	Lycoming IO-540-0360	1,745 kgs	Purchased	4

TARA SIAM LIMITED

Registration			Serial Number	Type	Type of Engine	Maximum Take-Off Weight	Status	Number of Seats
Mark	Date							
HS-TGD	16/12/87	B747-3D7	23721		General Electric CF6-80C2-B1	377,842 kgs	Purchased	423
HS-TMB	22/12/87	DC-10-30ER	48290		General Electric CF6-50C2	267,200 kgs	Purchased	255
HS-TBA	01/04/88	B737-200	21440		Pratt & Whitney JT8D-15	115,500 lbs	Purchased	124
HS-TBD	01/04/88	B737-2P5	22667		Pratt & Whitney JT8D-15	115,500 lbs	Purchased	124
HS-TSA	01/04/88	SD3-30	3085		Pratt & Whitney PT6A-45R	10,387 kgs	Purchased	33
HS-TSB	01/04/88	SD3-30	3086		Pratt & Whitney PT6A-45R	10,387 kgs	Purchased	33
HS-TSC	01/04/88	SD3-30	3087		Pratt & Whitney PT6A-45R	10,387 kgs	Purchased	33
HS-TSD	01/04/88	SD3-30	3088		Pratt & Whitney PT6A-45R	10,387 kgs	Purchased	33
HS-TBE	01/04/88	B737-2P5	23113		Pratt & Whitney JT8D-15	115,500 lbs	Purchased	124
HS-TSE	01/04/88	SD3-60	3680		Pratt & Whitney PT6A-65R	11,607 kgs	Purchased	40
HS-TSF	01/04/88	SD3-60	3681		Pratt & Whitney PT6A-65R	11,607 kgs	Purchased	40
HS-TIA	01/04/88	A310-200	415		General Electric CF6-802C2	142,000 kgs	Purchased	271
HS-TIC	01/04/88	A310-200	424		General Electric CF6-80C2	142,000 kgs	Lease-purchased	278
HS-TMC	26/05/88	DC-10-30ER	48319		General Electric CF6-50C2B	267,200 kgs	Purchased	255
HS-TAG	04/08/88	A300B4-605R	464		General Electric CF6-80C2-A5	170,500 kgs	Lease-purchased	267
HS-TGN	06/03/89	A300B4-103	71		General Electric CF6-50C2	157,500 kgs	Purchased	259
HS-THO	15/09/89	A300B4-103	72		General Electric CF6-50C2	157,500 kgs	Purchased	259
HS-TAZ	17/02/89	A300B4K-103	66		General Electric CF6-50C2	157,500 kgs	Lease-purchased	257
HS-TAY	09/03/89	A300B4K-103	65		General Electric CF6-50C2	157,500 kgs	Lease-purchased	257
HS-TBK	28/04/89	Bae 146 Series 300	3128		ALF 502R-5	43,091 kgs	Lease-purchased	112
HS-TBL	23/06/89	Bae 146 Series 300	3131		ALF 502R-5	43,091 kgs	Lease-purchased	112
HS-TAH	30/06/89	A300B4-605R	518		General Electric CF6-80C2-A5	170,500 kgs	Lease-purchased	267
HS-TBM	21/11/89	Bae 146 Series 300	E3129		ALF 502R-5	43,091 kgs	Lease-purchased	112
HS-TBO	01/12/89	Bae 146 Series 100	E1104		ALF 502R-5	38,101 kgs	Lease-purchased	90
HS-TBN	11/01/90	Bae 146 Series 300	E3149		ALF 502R-5	43,091 kgs	Lease-purchased	112
HS-TGH	21/02/90	B-747 4D7	24458		General Electric CF6-80C-2Blf604	385,553 kgs	Purchased	405
HS-TRA	23/02/90	ATR72	164		Pratt & Whitney PW124B	21,500 kgs	Purchased	66
HS-TGJ	22/03/90	B-747 4D7	24459		General Electric CF6-80C-2Blf	385,553 kgs	Purchased	405

II. Private Sector

Registration		Type	Serial Number	Type of Engine	Maximum Take-Off Weight	Status	Number of Seats
Mark	Date						
1. Thai Flying Club (Total 24 Aircraft)							
HS-ATC	10/05/83	Cessna 150H	150-68264	Continental O-200A	1,600 lbs	Purchased	2
HS-ATD	10/05/83	Cessna 150H	150-69200	Continental O-200A	1,600 lbs	Purchased	2
HS-AIE	10/05/83	CESSNA 150H	150-69037	Continental O-200A	1,600 lbs	Purchased	2
HS-AIG	13/10/83	Crumman Tiger AA-5B	AA5B-0674	Continental O-360 AAK	1,091 kgs	Purchased	4
HS-AIX	17/12/84	Mooney M20J	24-1498	Continental IO-360-A3B6D	1,245 kgs	Purchased	4
HS-AIP	21/12/84	Cessna 150M	150-76510	Rolls Royce/Continental O-200A	1,600 lbs	Purchased	2
HS-ATA	21/12/84	Mooney M20J	24-1499	Lycoming IO-360-A3B6D	1,245 kgs	Purchased	4
HS-ATI	12/02/86	Grumman Lynx AAL	AALC-0120	Lycoming O-235-L2C	1,600 lbs	Purchased	2
HS-AIO	16/04/86	Crumman Tiger AA-5B	AA5B-0955	Lycoming O-360 A4K	1,091 kgs	Purchased	4
HS-AIH	16/06/86	Grumman AA5A	AA5A-0594	Lycoming O-320-E2G	2,200 lbs	Purchased	4
HS-ATK	15/10/86	Piper Cherokee PA28-140	28-24630	Lycoming O-320E24	977 kgs	Purchased	4
HS-ATJ	02/08/89	Piper Cherokee PA28-140	28-20997	Lycoming O-320EZA	977 kgs	Purchased	4
HS-ATM	06/10/87	Mooney M20J (205)	24-3040	Lycoming IO-360-A3B6D	1,425 kgs	Purchased	4
HS-ATN	28/06/88	Grob G 109	6063	L-200 EBL.A	825 kgs	Purchased	2
HS-ATW	13/10/86	Aerospatiale TB-9	730	Lycoming O-320-D2A	1,060 kgs	Purchased	4
HS-ATV	13/10/88	Aerospatiale TB-9	729	Lycoming O-320-D2A	1,060 kgs	Purchased	4
HS-ATR	14/10/88	Aerospatiale TB-20	771	Lycoming TIO-540-ABLAD	1,403 kgs	Purchased	4
HS-ATU	18/05/89	Aerospatiale TB-20	570	Lycoming IO-540	1,403 kgs	Purchased	4
HS-ATF	24/05/89	Piper Cherokee PA-28-235	28-11356	Lycoming O-540-B5	2,900 lbs	Purchased	4
HS-ATY	14/07/89	Cessna 172 RG	172 RG 0577	Lycoming O-360	1,202 kgs	Purchased	4
HS-ATS	14/07/89	Cessna 172 RG	172 RG 0437	Lycoming O-036	1,202 kgs	Purchased	4
HS-AIZ	18/07/89	Aerospatiale TB-20	902	Lycoming IO-540	1,403 kgs	Purchased	4
HS-AIL	31/07/89	Cessna P-210N	P210-00241	TSIO-520P	1,785.71 kgs	Purchased	6
HS-AIQ	30/10/89	Mooney M 20 J	24-1664	Lycoming IO-360-A3B6D	1,245 kgs	Purchased	4

Registration	Mark	Date	Type	Serial Number	Type of Engine	Maximum Take-Off Weight	Status	Number of Seats
2. Bangkok Airways Co Ltd (Total 3 Aircraft)								
HS-SKC		14/01/85	Piper PA31-350 Chieftain	31-7652023	Lycoming TIO-540-J2BD	3,175 kgs	Purchased	9
HS-SKH		25/04/89	DCH-8 Series 100	144	120A	15,649 kgs	Lease-Purchased	41
HS-SKI		21/09/89	Dash 8-100	172	120A	15,649 kgs	Lease-Purchased	41
3. Thai Flying Services Co Ltd (Total 4 Aircraft)								
HS-TFA		17/02/81	Piper Seneca PA-34-200T	34-7671361	TSIO-360-E	2,083 kgs	Purchased	6
HS-TFE		19/10/87	Piper Aztec PA23-250	27-7954045	Avco Lycoming	5,200 lbs	Lease-purchased	6
HS-TED		19/10/87	Pilatus Porter PO6/B-HZ	581	PA6A-20	2,199.55 kgs	Lease-purchased	8
HS-NMB		13/02/90	AS350B	N.A.	N.A.	N.A.	Lease-purchased	5

Source: Department of Aviation

APPENDIX D : ORGANIZATIONAL STRUCTURE OF MINISTRIES

Chart 1

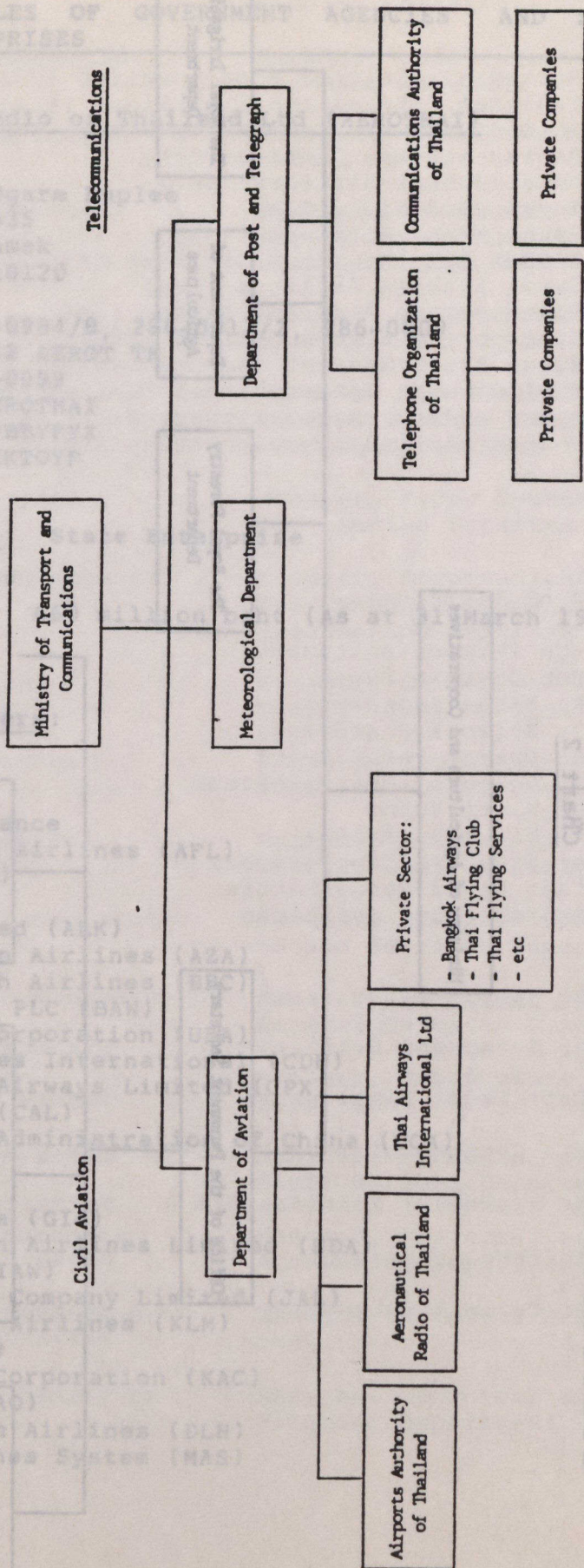
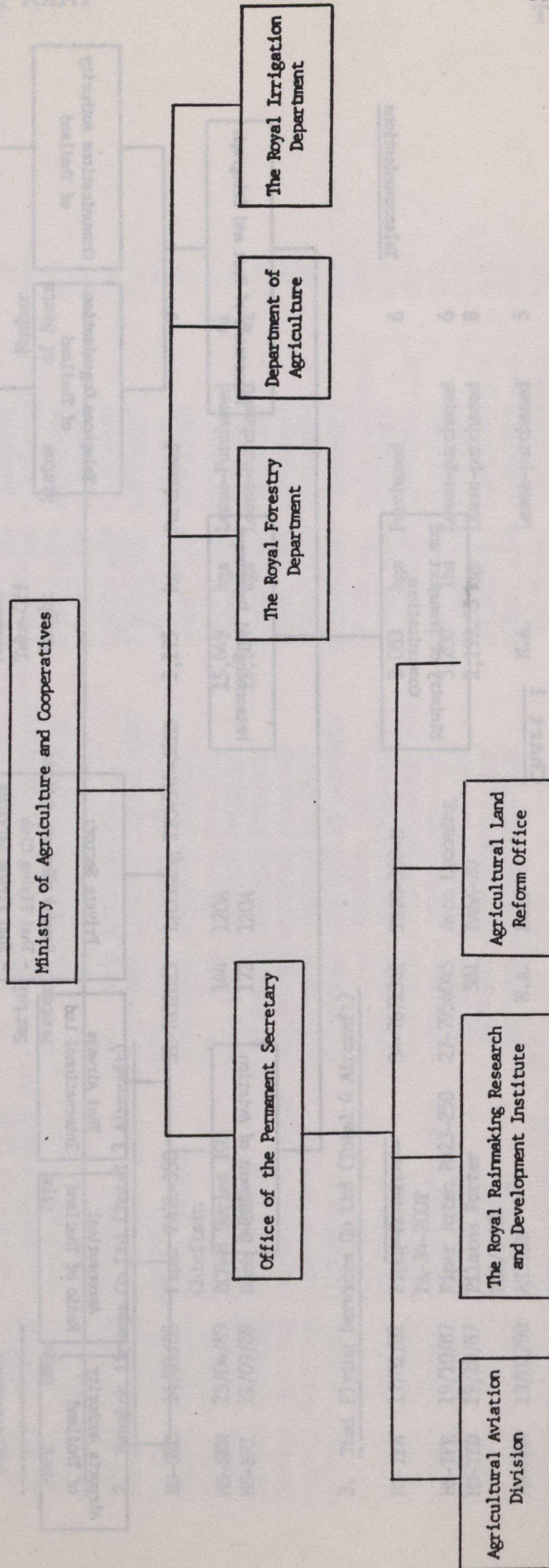


Chart 2



APPENDIX E : PROFILES OF GOVERNMENT AGENCIES AND STATE ENTERPRISES

I. Aeronautical Radio of Thailand Ltd (AEROTHAI)

Address: 102 Soi Ngarm Duplee
GPO Box 535
Tung Mahamek
Bangkok 10120

Tel: 286-0984/8, 286-0011/2, 286-0009
Tlx: 82852 AEROT TH
Fax: 286-0099
Cable: AEROTHAI
AFTN : VTBBYFYX
SITA : BKKTOYF

Organization Status: State Enterprise

Registered Capital: 660 million baht (As at 31 March 1990)

Company's Shareholders:

	%
1. Ministry of Finance	90.91
2. Aeroflot Soviet Airlines (AFL)	0.04
3. Air France (AFR)	0.22
4. Air India (AIC)	0.15
5. Air Lanka Limited (ALK)	0.07
6. Alitalia Italian Airlines (AZA)	0.06
7. Biman Bangladesh Airlines (BBC)	0.10
8. British Airways PLC (BAW)	0.15
9. Burma Airways Corporation (UBA)	0.10
10. Canadian Airlines International (CDN)	0.04
11. Cathay Pacific Airways Limited (CPX)	0.58
12. China Airlines (CAL)	0.43
13. Civil Aviation Administration of China (CCA)	0.07
14. Egyptair (MSR)	0.09
15. Finnair (FIN)	0.03
16. GARUDA Indonesia (GIA)	0.09
17. Hong Kong Dragon Airlines Limited (HDA)	0.12
18. Iraqi Airways (IAW)	0.04
19. Japan Air Lines Company Limited (JAL)	0.27
20. KLM Royal Dutch Airlines (KLM)	0.21
21. Korean Air (KAL)	0.07
22. Kuwait Airways Corporation (KAC)	0.04
23. Lao Aviation (LAO)	0.03
24. Lufthansa German Airlines (DLH)	0.15
25. Malaysian Airlines System (MAS)	0.28

	%
26. Northwest Airlines Incorporation (NWA)	0.10
27. Pakistan International Airlines (PIA)	0.15
28. Philippines Airline Incorporation (PAL)	0.16
29. Qantas Airways Limited (QFA)	0.22
30. Royal Brunei Airlines (RBA)	0.03
31. Royal Jordanian (RJA)	0.04
32. Royal Nepal Airlines (RNA)	0.10
33. SABENA Belgian World Airlines (SAB)	0.06
34. Saudi Arabian Airlines (SVA)	0.16
35. Scandinavian Airlines System (SAS)	0.13
36. Singapore Airlines Limited (SIA)	0.31
37. Swiss Air Transport Company Limited (SWR)	0.12
38. Thai Airways International Limited (THA)	3.77
39. Trans Mediterranean Airways SAL (TMA)	0.16
40. United Airlines Incorporation (UAL)	0.06
	100.00
	=====

Board of Directors:

1. ACM Chakorn Dattananda
2. Gen Somkuan Suwan
3. Mr Nibon Rananand
4. Dr Srisook Chandrangsū
5. Mr Prapat Patamayotin
6. Mr Rongroj Sriprasertsuk
7. Dr Kittti Yupho
8. Mr Visut Montriwat
9. Mr Singkarn Singkorapoom
10. Capt Sa-ad Sobsatrasorn
11. Mr Suraphong Srikhirin

Senior Management:

- | | |
|--------------------------------|--------------------------------------|
| 1. Mr Suraphong Srikhirin | Director & General Manager |
| 2. Capt Padet Limpisvasti | Deputy General Manager |
| 3. Mrs Chongkolni Boonyakierti | Assistant General Manager |
| 4. Mr Prakobkul Khittasangka | Technical Officer (ATS) |
| 5. Mr Revat Bunnag | Manager, Operation Division |
| 6. Mr Cherm Kongkeo | Manager, System Engineering Division |

TARA SIAM LIMITED

Background:

Not long after the Second World War came to an end, international airlines resumed operations to and through Thailand. The country was then unprepared in providing the means of communications and other aids to flying. Because the existence of aeronautical telecommunication was of prime necessity to international air transport, scheduled airlines joined together with the aid of International Aerodio Ltd and Aeronautical Radio Inc, and with the approval of the Government, formed the Company of Aeronautical Radio of Siam Ltd (AEROSIAM), to provide services to aeronautical operations in accordance with the standards and recommended practices of the International Civil Aviation Organization.

AEROSIAM started operations in 1948 as a licensee of the Government under an agreement which was initially to last for 10 years. This agreement was extended for another five years to 5 November 1963.

On 1 November 1963, the Government completely bought out the company's share capital and the name was then changed to Aeronautical Radio of Thailand Limited, briefly known as AEROTHAI. Later on, the scheduled airlines were allowed to become joint minor shareholders with the Government.

In the initial period, the company provided only aeronautical fixed telecommunications and ground-to-air communications services. As from 1 September 1949, air traffic control was incorporated into the company's services.

AEROSIAM started with a share capital of 2 million baht. The capital increased continually in line with new development requirements. The share capital of the company is presently 660 million baht with the Government holding 6,000,000 shares and the 40 member airlines altogether holding 600,000 shares with a par value of 100 baht.

It was the result from the Transport and Communications Ministry's decision to transfer the country's international airports in Chiang Mai, Hat Yai and Phuket from the responsibility of the Department of Aviation to the Airports Authority of Thailand. AEROTHAI was authorized to take over the supervision of aviation traffic of the airports starting with Chiang Mai on 1 March 1988 followed by Phuket and Hat Yai on 16 July 1988.

To modernize the company's activities, the replacement of old equipment commenced first at the Bangkok (Don Muang) International Airport before moving to regional airports including, Chiang Mai, Hat Yai and Phuket. The expansion has become necessary after the government transferred air traffic control work at the three regional airports to AEROTHAI.

In 1988, the International Civil Aviation Organization (ICAO) decided to present the prestigious Edward Warner Award to AEROTHAI as the most outstanding organization in the world industry.

This is the 22nd Edward Warner Award to AEROTHAI for its outstanding performance in helping stimulate and develop the aviation industry in Asia and the Pacific. AEROTHAI had also been credited with opening new air routes to reduce commercial flight times and distances, thus helping airlines save a lot of time and fuel.

Objectives, Policies and Functions:

A. Company's Policy

1. To perform its duty with efficiency, 24 hours a day and everyday throughout the year.
2. To operate on a non-profit basis with service charges assessed fairly and equitably.
3. To be non-discriminatory to all users.
4. To follow Government's policy.

B. Main Functions

1. Providing air traffic control services.
2. Operating the Aeronautical Fixed Telecommunication Network (AFTN) Communication Centre.
3. Rendering other related services in communications and electronics for air transport operations.

Thailand as a Member State of the International Civil Aviation Organization (ICAO) is responsible for the implementation of six main functions which ensure safety in air transportation. These functions, as outlined in the ICAO Regional Air Navigation Plan, are as follow:

- * Air Traffic Services
- * Aeronautical Communications
- * Aerodromes
- * Meteorology
- * Search and Rescue
- and * Aeronautical Information Services.

Aeronautical Radio of Thailand Ltd is entrusted by the Government to be responsible for the provision of air traffic services and aeronautical communications. The provision of these two services is taken as the primary objective of the company.

Furthermore, the company has been responsible for the provision of approach/aerodrome control services, aeronautical telecommunications services and air navigation aids facilities at all of the country's international airports since 1988.

C. Details of Main Functions

1. Air Traffic Services

This function is divisible into three parts, namely

- : Aerodrome Control
- : Approach Control
- and : Enroute or Area Control.

The first two parts as described above are controlled by each airport ie Chiang Mai, Hat Yai and Phuket Air Traffic Control Centres. The responsibility is within 5-35 nautical miles around the airport at altitudes varying from ground to 11,000 feet.

Air Traffic Service beyond the airports and extending to the boundary of Thailand and the Flight Information Region, which is the Enroute or Area Control function, is the responsibility of the Area Control operated by AEROTHAI.

2. Aeronautical Communications

This function is made up of four categories, namely

- : Aeronautical Fixed Services
- : Aeronautical Mobile Services
- : Radio Navigation Aids
- and : Aids to Final Approach and Landing.

Provision of the first three services is the responsibility of AEROTHAI at its Bangkok compound and the 3 above-mentioned airports.

In providing Area Control, Approach Control and Aerodrome Control as well as Aeronautical Fixed and Aeronautical Mobile Services and Radio Navigation Aids, AEROTHAI procures and maintains most of its own radio communications and electronics equipment. It also rents cables including microwave and satellite channels from the Telephone Organization of Thailand (TOT) and the Communications Authority of Thailand (CAT), for a few of its communications circuits.

In addition to the above-mentioned Air Traffic Services and Aeronautical Communications, the Government has entrusted AEROTHAI with the responsibility of providing related services to satisfy communication requirements

TARA SIAM LIMITED

of air transport operators. These requirements include the provision, installation and maintenance of operational control communications equipment. Moreover, AEROTHAI designs, manufactures, installs and repairs customized communication and electronic equipment for airlines as well as for government organizations and state enterprises which are involved with flight operations. The objective of such a function is to ensure expeditious, safe and efficient services to all aircraft coming in as well as going from and overflying Thailand.

AEROTHAI is responsible for radar control and guiding planes within a 200 mile radius of Bangkok. It hands over guidance to air traffic controllers at Don Muang Airport once the aircraft enters the 50 mile radius.

Communications between pilots and controllers are carried out on two systems - VHF (for civil aircraft) and UHF (for military aircraft) - provided by radio transmitters/receivers installed in AEROTHAI's compound in Bangkok and by remote control radio equipment located at stations in Lampang, Phitsanulok, Khon Kaen, Chumphon, Hat Yai and Phuket.

AEROTHAI, which is responsible for the Bangkok Flight Information Region (FIR), provides traffic control for both civil and military flights. Its radius of responsibility also extends to cover the South China Sea.

For long distance air/ground communications beyond the FIR and over the Bangkok Area of Responsibility, high frequency (HF) facilities are provided. AEROTHAI's HF Receiving Station is located about 20 kms southeast of Bangkok and the Transmitting Station is some 15 kms further away. Both stations are linked to the facilities at AEROTHAI's Bangkok compound by its own microwave system.

3. Aeronautical Fixed Telecommunications Network (AFTN) Communication Centre

The AFTN Communication Centre has direct circuits linking Thailand with neighbouring flight facilities including those in Singapore, Malaysia, Bangladesh, Laos, Burma, Hong Kong and India.

Utilising computerised switching systems, AEROTHAI receives, transmits, relays and distributes flight plans, flight schedules and other relevant data necessary for the safety of air transport operations.

Also functioning as the Main Collection Centre (MCC), it collects and exchanges aeronautical weather information (OPMET) in coordination with 17 branch offices inside and outside the kingdom.

Recently, to catch up with the ever increasing volume of air traffic, AEROTHAI established a teletype circuit to Kuwait - via satellite - which allows the AFTN Communication Centre to have a one-stop link to Vienna, thus providing more efficient communications between Asia/Pacific and Europe.

4. Other Services

AEROTHAI provides rental service on air-to-ground and ground-to-ground radio communication equipment, teleprinters, visual display units and other communications equipment geared to facilitate convenient communication among airlines and operators of associated businesses.

AEROTHAI's Workshop & Material Department designs and builds custom made electronic and communication equipment comprising

- * Remote Control Air-to-Ground Signalling and Monitoring Equipment
- * Integrated Communication Signalling and Monitoring Systems
- * ATC Simulators

and * Radio Monitoring System for Search and Rescue Coordination Centres

to meet requirements of users and the company's own operations.

II. Airports Authority of Thailand (AAT)

Address: Vibhavadi-Rangsit Road
Bangkok 10210

Tel: 535-1111, 535-1001, 535-1200, 531-5559
Tlx: N/A
Fax: 531-5559

Organization Status: State Enterprise

Board of Directors:

- | | |
|-------------------------------------|---|
| 1. ACM Kaset Rochananil | Chairman |
| 2. Mr Viroj Lowhaphandu | Representative,
Ministry of Finance |
| 3. Mr Sathien Vongvichien | Representative,
Ministry of Transport
and Communications |
| 4. ACM Krirkchai Harnsongkram | Representative, the
Royal Thai Air Force |
| 5. Mr Srisook Chandrangsu | |
| 6. Mr Sakol Skulthai | |
| 7. Maj Gen Sompong Kittivat | |
| 8. ACM Veera Kitchathorn | President, Thai Airways
International Ltd |
| 9. Pol Maj Gen Kriengkrai Karnasuta | Commander, Immigration
Division, The Royal
Thai Police Department |
| 10. ACM Janya Sukontasap | |
| 11. Air Marshal Somboon Rahong | Managing Director, AAT |

Senior Management:

- | | |
|------------------------------------|---------------------------------|
| 1. Air Marshal Somboon Rahong | Managing Director |
| 2. Flying Officer Pearl Rugsumruad | Secretary to Marshal
Somboon |

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- | | |
|---------------------------------|---|
| 3. Mr Manoj Pornpibul | Deputy Managing
Director (Planning &
Finance) |
| 4. Mrs Masawan Pattananupong | Secretary to Mr Manoj |
| 5. Group Capt Anake Udit | Deputy Managing
Director (Administra-
tion) |
| 6. Mrs Yupadee Limmathuruskul | Secretary to Group
Capt Anake |
| 7. Group Capt Phulsook Chupanya | Deputy Managing
Director (Operations) |
| 8. Mrs Sopar Rojnuckrin | Assistant Managing
Director |
| 9. Miss Chalita Manisiri | Secretary to Mrs Sopar |

Background:

Bangkok International Airport (Don Muang) originally was suitable only for small aircraft with a rolled-grass runway marked with a large T for landing assistance. The runway was later paved over to accommodate heavier planes and more permanent hangars were built. In 1938, civil aviation was placed under the control of the Royal Thai Air Force, which was also entrusted with immigration and customs responsibilities at the airport. Shortly before the Pacific War started in 1941, new office buildings and a passenger lounge were constructed.

The years immediately following the war saw a variety of significant airport developments, starting with a control tower organised with help from the British Royal Air Force in 1946. By 1955, when its official name was changed to Bangkok International Airport, it had a permanent 2,650-metre runway on the west side, five new taxiways, and new buildings.

As Bangkok emerged as a major Asian air hub, serving nearly every airline, and as planes increased in both size and speed, better facilities soon became imperative. Work on a four-storey departure building started in 1970 along with more car-parks and warehouses. In 1977, recognising the inconvenience of operating the airport through the Air Force, the Government set up a committee for the establishment of the Airports Authority of Thailand which came into being two years later.

The biggest changes at Bangkok's airport came during the present decade. In 1980, a nine-year construction project was launched that would transform the facility into one of the most modern in the region.

These improvements include a new western concrete runway - 60 metres wide and 3,700 metres long - fully equipped with a modern lighting system and navigational aids as well as 10 new taxiways, all of which became operational in August 1983. Two years later, a new domestic passenger terminal capable of serving 530 passengers during peak hours and a cargo terminal capable of handling 400,000 tons a year were both ready for use. Finally, a four-storey international passenger terminal opened in 1988 affording direct docking facilities for 26 planes and capable of serving 16 million passengers annually.

Objectives, Policies and Functions:

The AAT management policy was laid down by the AAT Board in its 1988-1991 Corporate Plan as follows:

1. the provision and development of efficient facilities to meet with present and future air transportation demand subject to breakdown requirements.
2. the development will be directed toward the support of air transportation.
3. the development and improvement of service infrastructure benefiting airport activities will be supported.
4. safety for aircraft, passengers and airport operators from threats and various terrorist activities will be assured in consonance with the AAT authority.
5. financial stability in the short and long term will be maintained.
6. business-oriented management will be carried out for self support and efficiency.
7. personnel will be managed and trained for efficiency and a good welfare and morale will be provided and maintained.
8. privatization will be performed in conjunction with the government policy.
9. understanding and good relations within the organization and with other organizations will be promoted.

At present, AAT's operation covers all the management of the international airports in Thailand ie Bangkok, Chiang Mai, Hat Yai, and Phuket while all the provincial airports are still looked after by the Department of Aviation.

III. Department of Aviation

Address: 71 Soi Ngarm-duplee
Rama IV Road
Bangkok 10120

Tel: 286-0921/5
Tlx: 72099 DEPAVIA TH
Fax: 286-8157

Organization Status: Government Agency

Senior Officers:

1. Mr Srisook Chandrangu Director General
2. Mr Rongroj Sriprosertsuk Deputy Director General
(Technical)
3. Mr Piyasak Chu-kes Deputy Director General
(Operation)
4. Ms Paranee Sucandhanaka Secretary, Office of the
Secretary
5. Ms Soothi Chongkol Director, Finance Division
6. Mr Bumroong Chinda Director, Technical Division
7. Mr Sawat Sittiwong Director, Air Transport Control
8. Mr Pradit Hoprasatsuk Director, Air Safety Division
9. Mr Chaichach Tansutthiwong Director, Construction and
Maintenance Division
10. Ms Boonruay Chobchai Director, Airport Service
Division
11. Mr Ong-Arj Lerdpong Director, Air Navigation
Facilities Division
12. Mr Swaeng Chongkol Director, Communication and
Air Traffic Control Division
13. Mr Bumrong Chinda Civil Aviation Training
Centre of Thailand

Background:

Civil aviation in Thailand started after World War I when war surplus aircraft were adapted for transport of mail, and later passengers. Since its early stage, civil aviation made it more convenient and faster to communicate between Bangkok and the provinces in the regions, and particularly remote areas. In 1919, Thailand ratified the International Convention for Air Navigation. It was the first step taken by Thailand to observe international criteria and regulations in civil aviation. The Minister of Defence was also the Officer in Charge of all air navigation matters and was responsible for proposing the draft of the Air Navigation Act BE 2465 (1922) to the King. The Act became effective on 26 August 1922.

In 1929, a government agency called "Air Transport Division" was established under the Economic Affairs Ministry's Office of the Secretary. In 1941, it was transferred to the Department of Transport under the Ministry of Communications.

A year later the Air Transport Division which deals with air transportation was upgraded and renamed as "the Civil Aviation Bureau".

The Civil Aviation Bureau was upgraded to become the "Department of Aviation" in 1963. The Department is responsible in dealing with international civil aviation and the development, operation and administration of all airports used in civil operations.

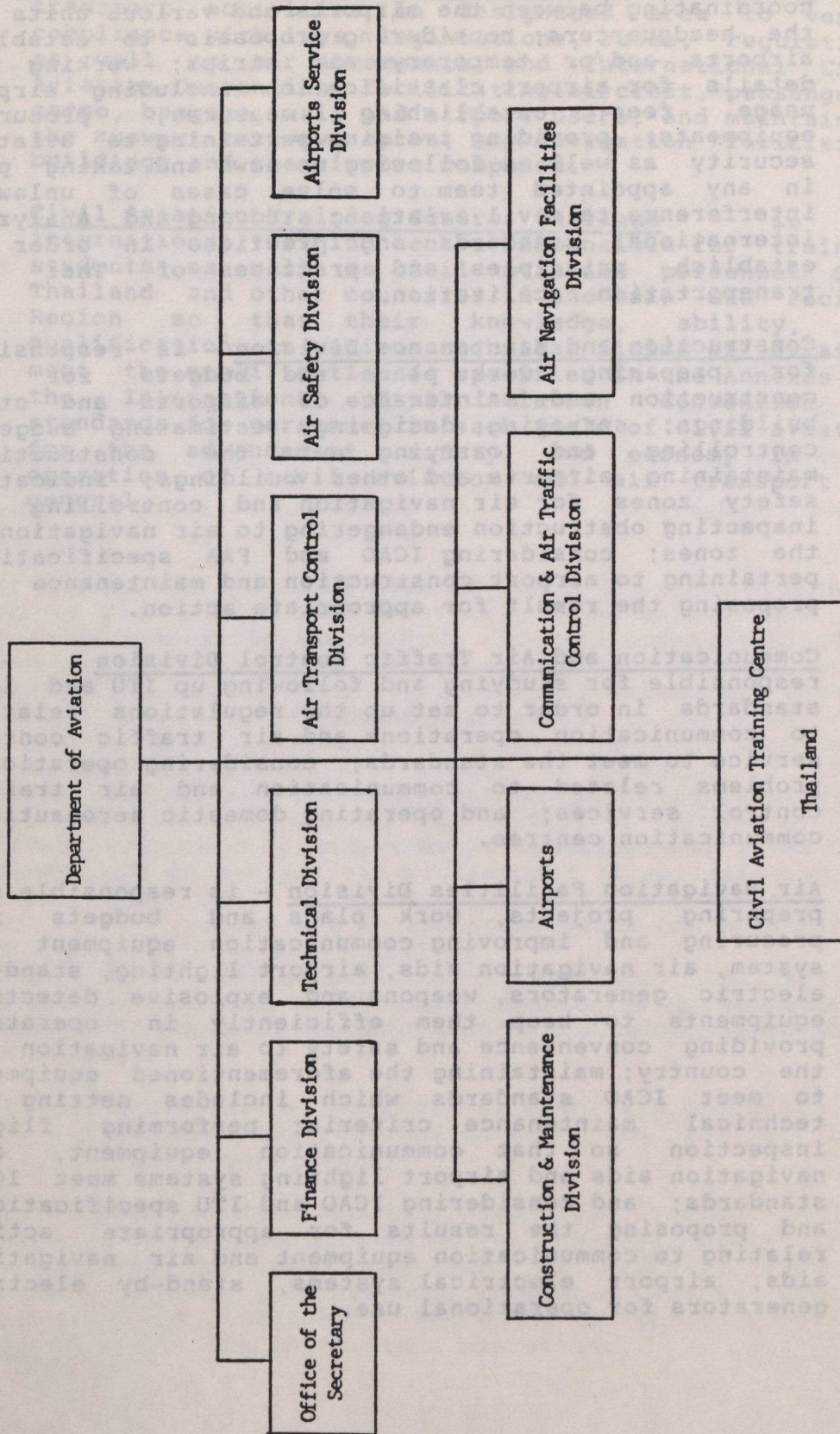
Objectives, Policies and Functions:

The Department of Aviation is the government agency responsible for civil aviation. Its functions range from constructing, developing, and operating regional airports, which includes providing Air Navigation Aids, Air Traffic Control Service, and domestic telecommunications and communications. It is the authority approving applications for aircraft registration, operating licences, and pilot licences; and controlling Thai airlines and foreign airlines in compliance with conditions stipulated in their operational permits, laws and international agreements. In its role to promote and develop air transportation, the Department acts as coordinator between various organizations and government units concerned. Moreover, its functions include technical and practical training in various fields of civil aviation.

The Department of Aviation comprises 9 divisions, the Civil Aviation Training Centre, and various regional airports. Their responsibilities are as follows:

1. Office of the Secretary - is responsible for the Department's regulations, government orders, laws, rules, legislation and related reports, foreign relations, information and public relations, and administrative work not stipulated as responsibility of any specific unit.
2. Financial and Accounting Division - is responsible for preparing the Department's budget, controlling and inspecting the budget expenditure, submitting payment proposals and keeping cash, preparing income and expenditure account; procuring supplies, maintaining materials, supplies, buildings, and vehicles.
3. Technical Division - is responsible for studying and analyzing air transport economic systems; studying and analyzing data and information in order to propose guidelines for developing air transportation; formulating the Department's policies and plans; following up and evaluating the results of project implementation; collecting, studying, analyzing, compiling and publishing air transport statistics reports; and maintaining the Department's library.
4. Air Transport Control Division - is responsible for considering all applications related to aviation rights, fares and rates; controlling and inspecting the operations to ensure that the operators comply with laws, conventions, agreements, rules, regulations and civil aviation orders as well as conditions stipulated in permits; and suggesting guidelines to form policies and to solve problems related to aviation rights, fares and rates.
5. Air Safety Division - is responsible for aircraft registration and issuing aircraft airworthiness certificates for Thai aircraft; licences and certificates for both air and ground personnel; aircraft maintenance base certificates; certificates for apron service and aircraft maintenance service; permits for carriage of animals or dangerous objects on board of aircraft; certificates for adapted aircraft; collecting and promulgating NOTAMS to units concerned, both domestic and international; publishing Aeronautical Information Publication (AIP); providing information related to aeronautical information; planning and coordinating Search and Rescue missions of aircraft or ships in distress; and accident investigation to find out the causes of the accidents.

Organization Chart



6. Airports Service Division - is responsible for coordinating between the airports and various units at the headquarters; considering proposals to establish airports and/or temporary air strips; working out details for airport classification including airport usage fees; establishing measures; procuring equipments; providing training pertaining to aviation security as well as following up news and taking part in any appointed team to solve cases of unlawful interference to civil aviation; studying and analyzing international standards and practices in order to establish principles and practices of Thai air transportation facilitation.
7. Construction and Maintenance Division - is responsible for preparing work plans and budgets for the construction and maintenance of airports and other buildings; surveying, designing, estimating budgets; controlling and carrying out the construction; maintaining airports and other buildings; indicating safety zones for air navigation and controlling and inspecting obstruction endangering to air navigation in the zones; considering ICAO and FAA specifications pertaining to airport construction and maintenance and proposing the result for appropriate action.
8. Communication and Air Traffic Control Division - is responsible for studying and following up ITU and ICAO standards in order to set up the regulations relating to communication operations and air traffic control service to meet the standards; considering operational problems related to communication and air traffic control services; and operating domestic aeronautical communication centres.
9. Air Navigation Facilities Division - is responsible for preparing projects, work plans and budgets for procuring and improving communication equipment and system, air navigation aids, airport lighting, stand-by electric generators, weapons and explosive detecting equipments to keep them efficiently in operation providing convenience and safety to air navigation in the country; maintaining the aforementioned equipment to meet ICAO standards which includes setting up technical maintenance criteria; performing flight inspection so that communication equipment, air navigation aids and airport lighting systems meet ICAO standards; and considering ICAO and ITU specifications and proposing the results for appropriate action relating to communication equipment and air navigation aids, airport electrical systems, stand-by electric generators for operational use.

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- 10. Airport - (each) is responsible for controlling air transport activities in designated area to verify compliance with laws, legislations, rules, regulations as well as air agreements and International Civil Aviation Convention; facilitating aircraft, passengers, cargo, baggage, mail and airport users; and maintaining the runway, taxiway, apron, air navigation facilities, buildings and the airport compound.
- 11. Civil Aviation Training Centre, Thailand - is an international training centre responsible for training students as well as civil aviation personnel from Thailand and other countries in the Asia and Pacific Region so that their knowledge, ability, and qualification in various technical fields of aviation meet the qualification as specified in the Annexes of the International Civil Aviation Convention as standards for personnel in each field of civil aviation for the advancement, safety, and economy in the operation of civil aviation and air transport in general.

Information and recommendations to its member. The organization is responsible for setting up the standards and regulations of civil aviation. ICAO also provides information and recommendations to its member. The organization is responsible for setting up the standards and regulations of civil aviation. ICAO also provides information and recommendations to its member.

In Thailand, ICAO has participated in Thai civil aviation development and has been instrumental in the development of the civil aviation sector in Thailand.

Generally, there are three types of aircraft used in each operation of civil aviation. The first type is the 1-2 aircraft with 500 kg capacity and 1-2 aircraft with 1,000-1,500 kg capacity.

Performance is a very important factor in the success or failure of rain making. Since 1969, the institute has used many types of aircraft such as the Cessna, Beechcraft, BNII Islander, Apache, Cessna, Dakota, etc. There are currently about 12 aircraft used in the institute's operations.

IV. International Civil Aviation Organization (ICAO)

Address: 252/1 Moo 1 Vibhavadi-Rangsit Road
Bangkok 10900

Tel: 512-2147/52

Tlx: 87969

Fax: 512-2319

Organization Status: International Organization

Senior Officer:

- | | |
|--------------------|--|
| 1. Mr M R Hood | Regional Representative |
| 2. Mr P H Solcomb | Deputy Regional Representative |
| 3. Mr S Rangarajan | Technical Officer, Aerodome
and Ground Aids |
| 4. Mr S A Ali | Air Transport Officer |
| 5. Dr E P Lysakov | Technical Officer, Meteorology |
| 6. Mr C M Bumstead | Technical Officer, Air Traffic
Service |

Objectives, Policies and Function:

ICAO is an international organization of the United Nations. The organization is responsible for setting up the standards and regulations of civil aviation. ICAO also provides information and recommendations to its member.

In Thailand, ICAO has participated in Thai civil aviation development as an adviser while the Department of Aviation is responsible for all of the country's aviation business.



V. The Royal Rainmaking Research and Development Institute

Address: 50 Phaholyothin Road
Kasetsart University
Bangkhen
Bangkok 10900

Tel: 579-3022, 579-4533/34, 579-1714

Fax: NA

Tlx: NA

Organization Status: Government Agency

Senior Officer:

1. Mr Saneh Warit

Director

Background:

Royal Rain Making is an idea of King Bhumipol who was concerned with the drought constantly faced in Thailand. In 1955, the King began researching and developing methods of rain-seeding and later on designated MR Theparidhi Devakul, an expert in agricultural engineering attached to the Ministry of Agriculture and Cooperatives, to carry on with the research and development. In 1969, the first successful rain-seeding experiment took place. As a result, in 1975, the Royal Rainmaking Research and Development Institute was established and placed under the control of Office of the Permanent Secretary, Ministry of Agriculture and Cooperatives.

Objectives, Policies and Functions:

The institute is responsible for research and development of the atmospheric conditions in seeding rain for the drought stricken areas.

Generally, there are 3-5 aircraft used in each operation of which 2-3 aircraft have 500 kgs capacity and 1-2 aircraft with 1,000-1,500 kgs capacity.

Aircraft performance is a very important factor in the efficiency and successfulness of rain making. Since 1969, the institute has used many types of aircraft such as Airtruck, Porter, BNII Islander, Apache, Cessna, Dakota, Dornien, Skyvan, CASA etc. There are currently about 12 aircraft used in the institute's operations.

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As the institute is only a research organization, the Ministry of Agriculture and Cooperatives has assigned the Agricultural Aviation Division under the Office of the Permanent Secretary to take responsibility of all the institute's aviation activities and those of other related organizations of the Ministry.

The Agricultural Aviation Division, as a technical division, looks after about sixty aircraft belonging to the Ministry of which thirty are helicopters while the remaining are fixed-wing aircraft. The division is also responsible for conducting the procurement process on behalf of the Ministry.

The Agricultural Aviation Division is located at

Ministry of Agriculture and Cooperatives
Rajdamnern Nok Avenue
Bangkok 10200

Tel: 281-3503, 281-3509, 281-5955
Tlx: N/A
Fax: 281-3514

The Division's most senior officer is its Director - Lt Col Thamnoon Singhagajen.

VI. Thai Airways International Ltd (THAI)

Address: 89 Vibhavadi-Rangsit Road
Bangkok 10900

Tel: (66 2) 513-0121
Tlx: 82359 THANTER TH
Fax: (66 2) 513-3385

Organization Status: State Enterprise

Registered Capital: 1,400 million baht (US\$ 55 m)

Major Shareholder: The Ministry of Finance holds 99.99% of shares.

Board of Directors:

- | | |
|--|---------------|
| 1. ACM Kaset Rochanani
(Commander-in-Chief, Royal Thai
Air Force) | Chairman |
| 2. Mr Sribhumi Sukhanetr
(Permanent Secretary, Ministry
of Transport and Communications) | Vice Chairman |
| 3. Mr Viroj Lowhaphandu
(Director-General, The Customs
Department, Ministry of Finance) | Director |
| 4. MR Kasem S Kasemsri
(Permanent Secretary for Foreign
Affairs, Ministry of Foreign
Affairs) | Director |
| 5. ACM Anan Kalinta
(Chief of Air Staff, Royal Thai
Air Force) | Director |
| 6. Dr Phisit Pakkasem
(Secretary-General, Office of
the National Economic and
Social Development Board) | Director |
| 7. Mr Komain Bhatarabhirom
(Director-General, Public
Prosecution Department) | Director |

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- 8. ACM Somboon Rahong (Managing Director, Airports Authority of Thailand) Director
- 9. Mr Mahidol Chantrangkurn (Deputy Permanent Secretary, Ministry of Transport and Communications) Director
- 10. ACM Weera Kitchathorn (President, Thai Airways International Ltd) Director
- 11. Pol Lt Chatrachai Bunya-Ananta (Executive Vice President, Thai Airways International Ltd) Director and Secretary to the Board
- 12. ACM Kamol Thejatangra Honorable Advisor
- 13. ACM Panieng Kantarat Honorable Advisor
- 14. Mr Panas Simasathien Honorable Advisor
- 15. ACM Prapan Dhupatemiya Honorable Advisor
- 16. ML Joengjan Kambhu Honorable Advisor
- 17. ACM Voranat Aphichari Honorable Advisor

Senior Management:

- 1. ACM Weera Kitchatorn President
- 2. Pol Lt Chatrachai Bunya-Ananta Member of the Board and Executive Vice President
- 3. Capt Udom Krisnampok Executive Vice President
- 4. Capt Prija Thawornpradit Inspector General
- 5. Capt Chusak Bhachaiyud Inspector General
- 6. Mr Thamnoon Wanglee Vice President, Finance Department
- 7. Capt Jothin Pamon-Montri Vice President, Ground Operations Department
- 8. Mr Nares Hovatanakul Vice President, Marketing Department

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- | | |
|-------------------------------|--|
| 9. Mr Wichitr Wayurakul | Vice President,
Corporate Planning
and International
Relations Department |
| 10. Capt Payoon Puakpong | Vice President,
Flight Operations
Department |
| 11. Capt Ataya Watanapongse | Vice President,
Domestic Flight
Operations Department |
| 12. Sqd Ldr Samram Phoungsook | Vice President,
Technical Department |
| 13. Miss Niyom Kosulvit | Vice President,
Domestic Services
Department-Marketing |

Long-Term Planning Committee (LTPC):

- | | |
|-----------------------------------|---------------|
| 1. Mr Sribhumi Sukhanetr | Chairman |
| 2. ACM Anan Kalinta | Vice Chairman |
| 3. ACM Gun Pimantip | |
| 4. Mr Panas Simasathien | |
| 5. Dr Phisit Pakkasem | |
| 6. ACM Weera Kitchathorn | |
| 7. Mr Mahidol Chantrangkurn | |
| 8. Pol Lt Chatrachai Bunya-Ananta | |
| 9. Capt Prija Thawornpradit | |
| 10. Capt Chusak Bhachaiyud | |
| 11. Capt Udom Krisnampok | |

Background:

After a number of experiments with aviation, the first regular domestic air mail service was set up in 1922 by the Royal Aeronautical Service of Thailand. Over the following decade, a number of cargo and passenger services were provided but on an irregular basis. The year 1930 saw the incorporation of the Aerial Transport of Siam Company Limited (ATSC), the first civilian airline in the country.

In 1951, the Siamese Airways Company (SAC), which took over the assets of its forerunner ATSC, amalgamated with another fledgling carrier, Pacific Overseas Airlines, to form Thai Airways Company Ltd (TAC), parent of today's Thai Airways International. TAC launched international flights using Lockheed Super Constellation aircraft, but the operation was not a commercial success.

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In a major reorganisation in 1959, TAC entered into a co-operative agreement with Scandinavian Airlines System (SAS), which agreed to provide technical, operational and marketing assistance in the formation of a new carrier, Thai Airways International. TAC invited SAS to take 30% of the equity in the new Thai Airways International (THAI).

SAS assisted THAI in arranging for the lease of suitable aircraft and the training of local staff to prepare them for the eventual takeover of the airline.

This mutually beneficial partnership was to continue until 1977 when THAI became fully self-sufficient. On 1 April 1977, after a 17 year capital participation partnership with SAS, the Thai government bought out the remaining 15% of SAS's holding and THAI became fully Thai-owned.

On 1 April 1988, TAC, which had been operating domestic airline services, merged with THAI resulting in the immediate expansion of flight frequencies and seat capacity over domestic routes. THAI experienced an overnight growth of 20%, gaining 1,841 staff (resulting in total employees of over 13,500 persons) and 11 aircraft (resulting in a total fleet of 41).

Although the Ministry of Finance is THAI's major shareholder (99.99%), the airline's operation is under the control of the Ministry of Transport and Communications and it is a tradition to have the chief of the Royal Thai Air Force assume its top management position.

During its twenty-nine year history, THAI has grown and expanded continuously to the point where the company has become one of the largest employers in Thailand.

Objectives, Policies and Functions:

A. The Company's Objectives

The overall objectives of THAI are seen by the company as being, firstly, to provide safe and convenient air transportation for the travelling public; secondly, to promote tourism to Thailand and to contribute to the national economy by earning foreign exchange and reducing foreign exchange outflow; and, thirdly, to project the good image and prestige of Thailand abroad.

B. Aircraft

The first aircraft used by THAI in 1960 was the Douglas DC-6BS. Subsequently, the airline utilized Convair 990 Coronados, Sub Aviation Caravelles (with which THAI was able to offer the first all-jet service in Asia) and Douglas DC-9S and DC-8S. THAI was gradually standardised into an all

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DC-8 operating fleet by using the first 140 seat series 33 aircraft the longer range stretched version of the series 62 with 146 seats and the series 63 with 200 seats.

In 1977, the wide-bodied 240 seat A300-B4 was introduced on THAI regional routes replacing some of the DC8-63 to meet the airline 's expansion needs. Two medium to long range DC10-30S were also used in THAI's European operations.

Two Boeing 747s series 200 were acquired in late 1979 to be used on intercontinental routes including operations to the USA. After its successful operation, three additional Jumbos were delivered in 1981 and the sixth Boeing 747 joined the fleet in June 1984. Another two A300-600S were introduced in October 1985.

On 1 April 1988, the government ordered the merger between Thai Airways International (THAI) and Thai Airways Co Ltd (TAC), the national domestic carrier. TAC's fleet of 11 aircraft were integrated into THAI's operation, boosting THAI's fleet to a total of 41 aircraft consisting of:

Boeing 747-300s	2
Boeing 747-200s	6
A300-B4s	12
A300-600s	7
A310s	2
DC10-30ERs	3
Boeing 737-200s	3
Shorts 330	4
Shorts 360s	2

Based on the most recent statistics as of March 1990, THAI's fleet has risen to a total of 52. Four of the new aircraft - two Boeing 747-400, one of each A300-600s and ATR 72 - are delivered through direct purchases while the other seven, five BAe 146 and two A300-B4-100, were leased. The present fleet consists of the following

Boeing 747-400s	2
Boeing 747-300s	2
Boeing 747-200s	6
Boeing 737-200s	3
A300-B4-200	12
A300-600s	8
A310-200	2
DC10-30ER	3
ATR 72	1
Shorts 330	4
Shorts 360	2
BAe 146	5
A300-B4-100	2

THAI has two basic types of route - domestic and inter-continental - and over the past 10 years three particular aircraft types, namely, the A300 Airbus, the DC-10 and the Boeing 747. In concentrating on these three types of aircraft, THAI has worked closely with the manufacturers to modify and adapt them to the airline's specific needs of which special significance in this was the adoption of a common engine type, the General Electric CF6, for use in not only the 747 and A300, but also in the intermediate size and range DC-10. In the early stage, THAI was the first airline in Asia to standardise engines throughout its fleet and, by doing so, achieved improvements in efficiency of operation and economy in maintenance.

C. Engines

Between 1960-1977, THAI purchased engines through Scandinavian Airlines System (SAS). After 1977, the airline began to make its own direct purchases of engines from General Electric (GE).

In 1977, the GE CF 6-50 engine was selected over the P&W JT9D to power THAI's first series of wide body Airbus A300 and Boeing 747's. Again in 1981, GE's new CF 6-80C2 engine was selected over the Pratt 4000 to power the latest wide-body aircraft fleet.

GE's assistance offered to THAI in setting up maintenance centre was behind its success over its competitor Pratt & Whitney.

GE had put more than US\$ 50 million in the aircraft maintenance center, currently operated by THAI at Don Muang Airport. The investment was part of GE's technical support to its customer.

GE faced a difficult time when the former THAI chairman ACM Voranat Apichari adopted a policy of creating more competition among equipment suppliers. This led to the purchase of Pratt & Whitney engines for three of the airline's new A300-600RS and it marks the first time that Pratt & Whitney engines have successfully penetrated the THAI market after trying for about 20 years.

ACM Kaset Rochanani, who became Chairman of THAI last October, is implementing an aircraft procurement policy that is contrary in almost every area to that set by his predecessor, ACM Voranat Apichari, who wanted to subject engine purchases to the tendering process.

ACM Kaset has specified that Boeing B747 aircraft should be fitted with General Electric (GE) engines while the Airbus aircraft will have Pratt and Whitney (P&W) engines. However, an exception will be allowed for the first four Airbus aircraft which will use GE engines because P&W is unable to meet the time constraints.

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At present, there are a total of 52 aircraft in THAI's fleet it is expected to reach 93 aircraft by 1993. This is considered to be large enough to accomodate two engine suppliers in its operation.

To acquire another chance to introduce its engines after its two failures in Thai market, P&W offers a big amount of money to assist THAI in setting up the new Maintenance Centre for its engines.

THAI's policy of engine inventory management has set the requirement of 10-15 per cent spare engines of its operation.

D. Maintenance Center

A 1.9 billion baht Wide Body Aircraft Maintenance Centre was opened at Don Muang International Airport in May 1985. It will enable THAI to carry out the most sophisticated repair and maintenance work on its growing fleet of aircraft.

THAI is expected to use up to 70% of the Centre's maximum capacity. The other 30% can be used by other airlines.

THAI's Maintenance Centre is one of the most comprehensive in the region. It covers the overhaul and repair of both airframe and components of its Airbus and Boeing 747 fleets. It can also handle the overhaul of its General Electric engines which are used in all its aircraft.

Two hangars are now available for airframe overhaul. One is equipped for major overhaul work while the other is equipped for light maintenance work, although the latter hangar can be equipped for heavier tasks.

The centre comprises a number of support shops and component overhaul shops. There is a shop to repair and rebuild CF-6 engines, with total assembly/disassembly and inspection levels.

THAI's Technical Department is responsible for all engineering and maintenance aspects of the airline's fleet. The department had earlier undertaken the first complete aircraft overhauls of an Airbus A300 and a B747 which included airframe reinforcement. The future plans provide for further expansion into the international aircraft maintenance market.

At present, most of THAI's aircraft are fitted with GE engines. Only the B737-200s and Shorts use P&W. As far as major repairs and maintenance are concerned, THAI mechanics are familiar with GE engines but are as yet unable to provide full servicing on P&W engines.

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Occupying a total area of 57,000 square metres (over 14 acres) adjacent to the main runway, this "Cargo Village" more than trebles the previous area devoted to cargo activities. It is virtually self-sufficient in facilities, containing separate import, export and bonded transit handling and storage areas; customs, administration, airline and freight agency offices; and postal, communications and banking amenities. The project was undertaken by the Airports Authority of Thailand in close co-operation with the national carrier, Thai International.

THAI's own cargo handling building, occupying some 75 per cent of the total village, is larger than five football fields. It is here that THAI handles not only its own cargo, but also operations for 30 other airlines serving Bangkok. In all, THAI is responsible for some 80 percent of total air cargo traffic moving through Bangkok International Airport.

Within the THAI cargo terminal are facilities for every type of specialised shipment. Strong rooms accommodate high value goods, and there are ample refrigerated rooms with full temperature control and back-up emergency generators for perishables. Particular areas are also designed for diplomatic cargoes, live animals and goods that require special attention during transit.

The complex is expected to contribute directly to the growth of the air-freight industry and to help establish Bangkok as a cargo traffic gateway.

H. Catering

THAI operates Thailand's largest airline catering service holding 75% of market share. THAI celebrated the opening of a new flight kitchen on May 8, 1988. The flight kitchen, which took 28 months to build is one of the biggest in the Far East and one of the most modern.

With 3 stories covering 28,000 square metres, it is nearly triple the size of the previous facility. THAI Catering Services provide 28,000 meals (70-120 flights per day) for 30 airlines including THAI. It is ready to produce from 32,000 to 35,000 per day.

APPENDIX F : PROFILES OF PRIVATE SECTOR COMPANIES

I. Bangkok Airways Co Ltd (BA)

Address: 2nd Floor, BUMC Building
144 Sukhumvit Road
Bangkok 10110

Tel: 253-8942/7
Fax: 253-4005
Tlx: 82654 BUMC TH

Registered Capital: 5 million baht

Major Shareholders:

	%
1. Sahakol Air Co Ltd	49.0
2. Dr Prasert Prasarthong-Osoth	29.1
3. Thai Petroleum Service Co Ltd	20.0

Board of Directors:

1. Dr Prasert Prasarthong-Osoth	Chairman
2. Ms Prapai Prasarthong-Osoth	Director
3. Capt Krajit Haphananont	Director
4. Mrs Thiem-chan Inthuwong	Director
5. Mr Theera Unakul	Director

Senior Management:

1. Dr Prasert Prasarthong-Osoth	President
2. Mr Nipondh Chantorn	Vice President

Background:

The roots of Bangkok Airways Co Ltd can be traced back to 1974 when Dr Prasert Prasarthong-Osoth and Mr Nipondh Chantorn, an expert in aviation industry, started operating taxi flights for oil-exploration firms.

In 1983, the Ministry of Transport and Communications announced its intention to promote domestic privately-owned airlines to operate scheduled flights on routes not covered by Thai Airways Co Ltd (TAC) which is now part of Thai Airways International.

In response to this policy, Sahakol Air was established in 1985 and applied for traffic rights. In the beginning, the airline was permitted to operate flights on the following routes:

TARA SIAM LIMITED

- * Bangkok-Nakhon Ratchasima (Korat)
- * Bangkok-Surin
- and * Bangkok-Krabi

The airline used a Brazilian-made Bandeirante END 110 PS 18-seater aircraft in its operation. The aircraft had an old body with new US engines (model EMB-100) and cost about 30 million baht.

The company however ran into financial difficulties. It halted all of its services in 1987 but retained its traffic rights.

In late 1985, the Ministry of Transport and Communications approved Sahakol Air's plan to build Thailand's first privately owned airport on Samui Island (Koh Samui) in the south of Thailand. The project took place after a year's study by the company which indicated that the only existing transport to the island by sea was inconvenient and time consuming. This was part of the move to develop the small island into another major Thai tourist attraction.

The airport is built on a 250-rai piece of land with an investment of about 60 million baht of which 20 million baht was for land, 33 million baht for construction and the remaining for equipment. The runway, 45 metres by 1,850 metres, was designed to accommodate only small aircraft like Shorts, Dash or Afro. The construction took about a year and was completed in 1988.

After the success of the country's "Tourism Year" in 1987, Bangkok Airways Co Ltd was established as Sahakol Air's flagship airline to operate scheduled flights between Bangkok and Samui Island.

Current Business Activities:

To date Bangkok Airways has been granted rights to operate flights on the following routes:

- * Bangkok-Samui Island
- * Samui Island-Hat Yai-Phuket
- * Bangkok-Rayong-Phuket
- and * Bangkok-Krabi-Phuket-Hat Yai

At present, the airline is only operating scheduled flights on the Bangkok-Samui Island and Samui Island-Phuket routes and has suspended its services between Samui-Hat Yai-Phuket pending further marketing studies and preparation.

The airline has yet to operate on the Bangkok-Ranong-Phuket and Bangkok-Krabi-Phuket routes due to problems with airport facilities and it is presently seeking support from the authorities to help develop them.

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Since mid-April 1989, Bangkok Airways has been flying six roundtrips daily between Bangkok and Samui and one round trip between Samui Island and Phuket, using two 37 seater Canadian-built De Havilland Dash-85.

It plans to bring in one new Dash-8 aircraft, a 50-seater, to provide the services in mid 1990.

The airline's average load factor has increased to 90 per cent and most of its passengers(70 per cent) are foreigners.

In 1989, the Board of Investment (BOI) rejected a second request by Bangkok Airways for promotional privileges to build an airport on Samui Island.

Recently, Bangkok Airways has been permitted to use U-Tapao Airport as its hub to operate to and from Bangkok, Chiang Mai, Hat Yai, Chiang Rai, Phuket and between Bangkok-Hua Hin in Prachuab Khiri Khan Province. The traffic rights would be given for a five-year period.

The airport is built on a 150-rai piece of land with an investment of about 60 million baht. The runway is 1,850 metres long and 45 metres wide. The runway is designed to accommodate only small aircraft like Shorts, Dash or ATR. The construction was completed in 1988.

The success of the company is due to the success of Bangkok Airways Co Ltd which was established in 1974 to operate a scheduled airline between Bangkok and Samui Island.

Current Business Activities:

To date Bangkok Airways has been operating the following routes:

- * Bangkok-Samui Island
- * Samui Island-Hat Yai-Phuket
- * Bangkok-Rayong-Phuket

The airline has not yet started operating on the Bangkok-Samui Island and Bangkok-Hat Yai-Phuket routes and has suspended its services between Samui-Hat Yai-Phuket. The airline is presently seeking permission from the authorities to help develop them.

In 1981, the airline was established as a public company. In the beginning, the airline was operated as a private company. The airline has since been operating as a public company.

II. Thai Connector Cargo Airline Co Ltd

Address: 4th Floor
448 Ratchadapisak Road
Huay Khwang
Bangkok 10400

Tel: N/A

Tlx: N/A

Fax: N/A

Registered Capital: 50 million baht

Major Shareholders:

	%
1. Mr Peeraphol Israprasart	95.7
2. Mr Nirand Chunchaimongkol	2.0
3. Mr Surawit Pitaklimsakul	2.0

Board of Directors:

1. Mr Peeraphol Israprasart
2. Mr Nirand Chunchaimongkol
3. Mr Surawit Pitaklimsakul
4. Mr Chartchai Siribunhon
5. Ms Thirayu Srisansukdee
6. Mr Pramuk Waelsamrong
7. Mrs Sumanee Pitaklimsakul

Background and Current Business Activities:

Thai Connector Cargo Airline Co Ltd is being formed to provide domestic airfreight services and support to the national flag carrier, Thai Airways International (THAI). The Department of Aviation has completed a study on the project, as suggested by Transport and Communications Minister Montree Pongpanit, and so far has endorsed the scheme and will seek approval from the Ministry.

However, it has set a condition that Thai shareholding must account for at least 70 per cent of the investment. It was considered that the scheme will be beneficial to the country's economy in the long term to solve the shortage of air cargo space which is affecting certain agricultural exports such as fruit and flowers.

The Department of Aviation considers that establishment of a private air cargo service will eventually assist Thailand to become a regional air cargo centre in this part of the world which is one of the Government's objectives. Besides, Thailand's effort to attain the status of a newly-industrialized country would be strengthened.

The Ministry however still has to receive formal approval from the Cabinet to proceed with its plan. At present, there is a Cabinet ruling which bans the establishment of private airlines. This was based on the situation in the past decade when the provision of air cargo service for the country was not yet important.

It should however be noted that Thai Airways International (THAI) still has strong reservations regarding the private all-cargo venture as it believes that there would be more negative results which will impact on its operations.

The national flag carrier believes that the private cargo airline, which will use a DC-8 cargo freighter, will fly mostly on THAI's routes. THAI also balked at a suggestion of the Aviation Department that flights and routes could be scheduled and allocated for the two airlines because such practice runs counter to free competition and might cause problems later.

Whether such opposition from THAI will result in the planned establishment of Thai Connector Cargo Airline being either abandoned or postponed is unclear at present.

- 1. Mr. Sumanee Pitakimaskul
- 2. Mr. Pramuk Watsarong
- 3. Ms. Thirayu Srisaengkoo
- 4. Mr. Charoat Sittibun
- 5. Mr. Surawit

Background and Current Business Activities:

That Connector Cargo Airline Co Ltd is being formed to provide domestic airfreight services and support to the national flag carrier, Thai Airways International (THAI). The Department of Aviation has completed a study on the project, as suggested by Transport and Communications Minister Montree Pongpanit, and so far has endorsed the scheme and will seek approval from the Ministry.

However, it has set a condition that Thai shareholders must account for at least 50 per cent of the investment. It was considered that the scheme will be beneficial to the country's economy in the long term to solve the shortage of air cargo space which is affecting certain agricultural exports such as fruit and flowers.

III. Thai Flying Club

Address:

Office : 891 Rama I Road
Prathumwan
Bangkok 10330

Tel: 215-0060/3

Tlx: N/A

Fax: N/A

Airport: Bang Phra Airport
Cholburi

Senior Management:

- | | |
|------------------------------------|-------------------|
| 1. ACM Amphon Kondee | President |
| 2. Wing Commander Krasin Naka-a-pi | Managing Director |
| 3. Second Lt Prachuk Sibunruang | Secretary |
| 4. Mr Theera T Suwan | Treasurer |

Background:

Due to the lack of civil-aviation facilities for individuals in Thailand as a result of restrictions in the Thai legal system, civilian flying activities had to take place at the Royal Thai Air Force's training centre where it is not only inconvenient but also limited to the few individuals who could obtain permission.

On 16 August 1977, the Thai Flying Club was established by a group of persons who are very fond of flying activities. Marshal Fuen Ronaphakartritthakhani of the Royal Thai Air Force (RTAF) was the first president of the Club which had 14 directors.

Current Business Activities:

The Club's principle objectives are:

1. to promote individuals' recreational flying
- and 2. to support public activities.

The Club is a non-profit making organisation and is registered at the Department of Aviation as an agent to facilitate its members' activities.

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At present, there are about 120 members and 26 aircraft registered in the name of the Club of which 6 are owned by the Club while the remaining 20 belong to its members.

The Department of Aviation has permitted the Club to operate its flying activities in the approved area on Saturdays and Sundays from 6.00 am to 6.00 pm. In order to be able to fly outside the approved area, permission must be obtained from the Department of Aviation at least 3 day prior to the activity taking place. Each pilot must also strictly adhere to all flight regulations laid down by the Department of Aviation.

The Department of Aviation has authorised the use of Bang Phra Airport as a temporary airport to serve the Club's activities. Its runway, 30 metres wide and 900 metres long, is of soil aggregate.

Membership Fees:

Registration Fee	20,000 baht (1st year)
Annual Fee	2,400 baht
Deposit for possible expenses which may be incurred	5,000 baht

On 16 August 1977, the Thai Flying Club was established by a group of persons who are very fond of flying activities. Marshal Phan Ranghakarathitthakorn of the Royal Thai Air Force (RTAF) was the first president of the Club which had 14 directors.

Current Business Activities:

The Club's principle objectives are:

1. to promote individuals' recreational flying
2. to support public activities.

The Club is a non-profit making organization and is registered at the Department of Aviation as an agent to facilitate its members' activities.

IV. Thai Flying Service Co Ltd

Address: Piyatane Building
392 Sukhumvit Road
Bangkok 10110

Tel : 258-1416, 258-1413/4, 259-6473, 259-6872
Fax : 258-6597
Tlx : 20542 THAI FLY

Registered Capital: 5 million baht

Major Shareholders:

	%
1. Mr Thidej Maithai	19.0
2. Prof Krisda Arunwong na Ayudhya	19.0
3. Mr Prachun Kunakasem	19.0
4. Skyline Travel Services Co Ltd	19.0
5. Mr Piya Bhirompakdi	9.5
6. Mr Santi Bhirompakdi	9.5

Management:

Board of Directors

1. Mr Thidej Maithai	Chairman
2. Air Marshal Sira Isarangkul na Ayudhya	Director
3. Prof Krisda Arunwong na Ayudhya	Director
4. Mr Chanchai Visatkul	Director
5. Ms Kittima Kunakasame	Director
6. Mr Piya Bhirompakdi	Director
7. Mr Santi Bhirompakdi	Director
8. Mr Chaisitti Chakreeyarut	Director

Senior Management

1. Mr Thidej Maithai	Managing Director
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Background and Current Business Activities:

The Thai Flying Service Co Ltd was established in 1978 to operate a variety of air services in Thailand eg passenger, air-cargo chartered services, aerial photography, survey and cloud seeding services etc. It has provided air services to various Thai Government projects, foreign governments and multinational corporations, ie the Minebea Group.

TARA SIAM LIMITED

A consortium of Thai companies led by Thai Flying Service has recently signed an agreement with the US-based Statewest Airlines to establish a new airline. The Thai partners consist of Thai Flying Service Co, Asia Voyages and a Business International Group affiliate. The three will hold a combined 70% of the equity in the new company while Statewest Airlines and San Francisco-based Pacific Gate Corp will hold 25% and 5%, respectively.

The formation of the new company will be completed in April 1990, after which the shareholders will meet to discuss the final details of the investment project and seek Civil Aviation Department approval.

According to the proposal submitted to the Ministry of Commerce, the company will have an initial registered capital of 10 million baht.

The company plans to launch operations with a domestic chartered service as Thai Flying Service already holds the rights to offer this service.

Thai Flying Service managing director, Mr Thidej Maithai and Statewest Chairman, Mr Rudy Miller will serve as Co-Chairman of the new joint venture company and Business International Co managing director, Mr Pongsak Sampavakoo, has been assigned as managing director.

The fleet, technical operation, maintenance and training will be the responsibility of the American partner. Apart from technological assistance, Statewest will also provide leasing and booking services through its interline operation network with several major domestic airlines in the US to directly book flights in Thailand.

Coinciding with the establishment of the new company, consortium member Asia Voyages has also been granted a 3-year right to operate chartered flights by the Burmese Government.

This came as a result of an agreement made in December 1989 between the Thai and Burmese governments in which authorized Thai airlines will be allowed to operate chartered flights to Burma on the Chiang Mai-Rangoon-Mandalay and Pagan route.

According to the agreement, the Burmese Government will allow the chartered flights to fly in 300 passengers a week from Chiang Mai in 1990 and with the number increasing to 1,450 passengers a week in 1991-1992.

Asia Voyages plans to operate a twice weekly flight on the Chiang Mai-Mandalay and Pagan route in the form of a packaged tour (2 days 1 night). At present, Asia Voyages is looking for aircraft for its services which is expected to commence sometime during the middle of 1990.

V. Tropical Sea-air Co Ltd

Address: 80/71 Soi Saree Village
Ramkhamhaeng Road
Bangkapi
Bangkok

Tel: N/A
Tlx: N/A
Fax: N/A

Registered Capital: 30 million baht

Major Shareholders:

	%
1. Mrs Kamolwan Hancock	40.0
2. Mr Henry Liore Hancock	30.0
3. Ms Jintana Trisukontawong	6.0
4. Mrs Suwan Ketkinta	6.0
5. Ms Suchada Ketkinta	6.0
6. Mr Montree Narongwanich	6.0
7. Mrs Patummal Sujarit	6.0

Board of Directors:

1. Mr Henry Liore Hancock	Chairman
2. Mrs Kamolwan Hancock	Director
3. Ms Jintana Trisukontawong	Director
4. Mrs Suwan Katkinta	Director
5. Ms Suchada Katkinta	Director
6. Mr Montree Narongwanich	Director
7. Mrs Patummal Sujarit	Director

Background and Current Business Activities:

The Ministry of Transport and Communications approved Tropical Sea-air's plan to operate amphibious aircraft services in the Gulf of Thailand and Andaman Sea to promote tourism to various islands and seaside resorts. The traffic right is for five years from 30 January 1990.

The company is required to begin its operations within six months of the approval date and would have to promptly submit a flight schedule to the Department of Aviation.

The company's operations would be restricted only to Thailand, covering the Gulf, including Pattaya and surrounding islands, Hua Hin, Samui Island, Surat Thani, Krabi, Pee Pee Island and the Similan Islands in the Andaman Sea.

The company would have to seek prior approval to operate two 24-seater Grumman Albatross aircraft.

Apart from Bangkok and Phuket airports, Tropical Sea-air's amphibious aircraft would land in the sea off Samui Island, Surat Thani, Krabi, Similan Islands and Pee Pee Island.

Statewest Airlines and San Francisco-based Pacific Gate Corp will hold 25% and 5%, respectively.

The formation of the new company will be completed in April 1990, after which the shareholders will discuss the final details of the investment project and seek Civil Aviation Department approval.

According to the prospectus, the company will have an initial registered capital of 30 million Baht. Major shareholders:

- 1. Mrs Karolwan Hancock
- 2. Mr Henry Liang Hancock
- 3. Mr William Liang Hancock
- 4. Mr William Liang Hancock
- 5. Mr William Liang Hancock
- 6. Mr William Liang Hancock
- 7. Mr William Liang Hancock

The fleet, technical operation, maintenance and training will be the responsibility of the American parent company. The company will also provide booking services and ground handling facilities. The company will also provide ground handling facilities. The company will also provide ground handling facilities.

This company is required to obtain approval from the Department of Civil Aviation to operate amphibious aircraft. The company is required to obtain approval from the Department of Civil Aviation to operate amphibious aircraft. The company is required to obtain approval from the Department of Civil Aviation to operate amphibious aircraft.

APPENDIX G : LIST OF AIRPORTS

Airports	Runway		Facility		Remark
	Size Width * Length (m)	Surface	Maximum Capacity (Seats)	Utilization	
NORTH					
1. Chiang Mai	45 * 3100	Asphaltic Concrete		Every Type	
2. Chiang Rai (Present)	30 * 1475	Asphaltic Concrete	110	Bae 146, Shorts, ATR 42	
Chiang Rai (New)	45 * 3000	Asphaltic Concrete	250 - 300	Airbus, B737, Bae 146	Construction will be finished in 1991
3. Mae Hong Son	30 * 1630	Asphaltic Concrete	110	ATR 42, Shorts	
4. Nan	45 * 2000	Asphaltic Concrete	50	Bae 146, ATR 42, Shorts	
5. Lampang	30 * 1475	Asphaltic Concrete	110	ATR 42, Shorts	
6. Phrae	30 * 1500	Asphaltic Concrete	50	Bae 146, ATR 42, Shorts	
7. Phitsamulok	45 * 2180	Asphaltic Concrete	150	ATR 42, Shorts	
8. Tak	30 * 1500	Asphaltic Concrete	50	B737, ATR 42, Shorts	
9. Mae Sot	30 * 1500	Asphaltic Concrete	50	ATR 42, Shorts	
10. Pai	20 * 700	Soil Aggregate	10	ATR 42, Shorts	
11. Khun Yuam	45 * 1100	Soil Aggregate	10	Small Air Taxi	No scheduled flights
12. Mae Sariang	30 * 1070	Soil Aggregate	30	Small Air Taxi	No scheduled flights
13. Uttaradit	30 * 1520	Asphalt	50	DC-3, Shorts	No scheduled flights
14. Lom Sak (Present)	30 * 1200	Asphaltic Concrete	20	Shorts, ATR 2	No scheduled flights
Lom Sak (New)	30 * 1500	Asphaltic Concrete	50	Bandeirante	Construction will be finished in 1991
				ATR 42, Shorts, Bandeirante	

TARA SIAM LIMITED

The company has to seek prior approval to operate the 24-seater Grumman Albatross aircraft.

Apart from Bangkok and Phuket airports, Tropical Sea-air's amphibious would land at the sea off Samui Island, Surin.

Airport	Runway		Facility		Remark
	Size Width * Length (m)	Surface	Maximum Capacity (Seats)	Utilization	
NORTHEAST					
1. Khon Kaen	45 * 2050	Asphaltic Concrete	150	B737, BAe 146, ATR 42, Shorts	
2. Udon Thani	38 * 3048	Concrete	150	B737, BAe 146, ATR 42, Shorts	
3. Ubon Ratchathani	38 * 2743	Concrete	150	B737, BAe 146, ATR 42, Shorts	
4. Nakorn Ratchasima	45 * 3000	Concrete	10	Every Type	
5. Loei	30 * 1500	Asphaltic Concrete	50	ATR 42, Shorts	
6. Sakon Nakhon	44 * 2500	Asphaltic Concrete	150	B737, BAe 146, ATR 42, Shorts	
7. Burri Ram	30 * 1500	Asphaltic Concrete	50	ATR 42, Shorts	Construction will be finished in 1991
8. Roi Et (Present)	30 * 800	Soi Aggregate	10	Small Air Taxi	
8. Roi Et (New)	30 * 1500	Asphaltic Concrete	50	ATR 42, Shorts	Construction will be finished in 1992
9. Nam Phong*		Amphoe Nam Phong, Khon Kaen			
10. Nakhon Phanom*		Amphoe Muang, Nakhon Phanom			
11. Phu Khieo*		Amphoe Phu Khieo, Chaiyaphum			
12. Bung Kan*		Amphoe Bung Kan, Nong Khai			
13. Chumphon Buri*		Amphoe Chumphon Buri, Surin			
14. Nang Rong*		Amphoe Nang Rong, Buriram			
15. Nong Sung*		Amphoe Nong Sung, Nakhon Phanom			
16. Wang Nang*		Amphoe Muang, Maha Sarakham			
17. Na Kur*		Amphoe Kuchinarai, Kalasin			

BLENDIX S : FICL OF VIRGONIS

Airport	Runway		Facility		Remark
	Size Width * Length (m)	Surface	Maximum Capacity (Seats)	Utilization	
<u>CENTRAL</u>					
1. Bangkok (Don Muang)	60 * 3700	Concrete		Every Type	Western Runway
2. U-Tapao	45 * 3500	Asphaltic Concrete		Every Type	Eastern Runway
3. Kamphaeng Saen*	60 * 3500	Concrete		Every Type	
4. Kok Kra Thiam*		Amphoe Kamphaeng Saen, Nakhon Pathom			
5. Takhli*		Amphoe Muang, Lop Buri			
6. Wattana Nakhon*		Amphoe Takhli, Nakhon Sawan			
7. Ploy Vhaeng*		Amphoe Wattana Nakhon, Prachin Buri			
8. Chai Badan*		Amphoe Tha Mai, Chanthaburi			
9. Kok Sa Lung*		Amphoe Chai Badan, Lop Buri			
10. Kao E-To*		Amphoe Chai Badan, Lop Buri			
11. Tha Yang*		Amphoe Muang, Prachin Buri			
12. Kanchanaburi*		Amphoe Tha Yang, Phetchaburi			
13. Bung Chum*		Amphoe Muang, Kanchanaburi			
		Amphoe Chai Badan, Lop Buri			

Airport	Runway		Facility		Remark
	Size Width * Length (m)	Surface	Maximum Capacity (Seats)	Utilization	
1. Hua Hin	30 * 1200	Asphaltic Concrete	50	ATR 42, Shorts	No scheduled flights
2. Surat Thani	45 * 2500	Asphaltic Concrete	250 - 300	Airbus, B737, Bae 146, ATR 42, Shorts	
3. Phuket	45 * 3000	Asphaltic Concrete		Every Type	
4. Hat Yai	45 * 3050	Asphaltic Concrete		Every Type	
5. Nakhon Si Thammarat	35 * 1100	Asphaltic Concrete	50	ATR 42, Shorts	
6. Trang	30 * 1500	Asphaltic Concrete	110	Bae 146, ATR 42, Shorts	
7. Pattani	40 * 1400	Asphaltic Concrete	50	Bae 146, ATR 42, Shorts	
8. Narathiwat	45 * 2000	Asphaltic Concrete	150	B737, ATR 42, Bae 146, Shorts	
9. Krabi	12 * 1200	Alphalt	20	Bandeirante	No scheduled flights
10. Ranong (Present)	30 * 1080	Soil Aggregate	30	DC-3	No scheduled flights
10. Ranong (New)	30 * 1500	Asphaltic Concrete	50	ATR 42, Shorts	Construction will be finished in 1992
11. Prachuap Khiri Khan*		Amphoe Muang, Prachuap Khiri Khan			
12. Huai Toey*		Amphoe Phumphin, Surat Thani			
13. Hat Yai*		Amphoe Hat Yai, Song Khla			
14. Koh Ta Kian*		Amphoe Muang, Trat			
15. Kuan Kur*		Amphoe Muang, Satun			
16. Bo Thong*		Amphoe Nong Chik, Pattani			
17. Ya Rom*		Amphoe Betong, Yala			
18. Tung Khai*		Amphoe Hat Yai, Songkhla			
19. Tha Sarp*		Amphoe Muang, Yala			
20. Haul Sak*		Amphoe Bang Saphan, Prachuap Khiri Khan			
21. Bin Pae*		Amphoe Muang, Ranong			

Note : Every Type = B747, DC-10, Airbus, B737, Bae 146, ATR 42, Shorts

* = Airport under the RTAF which are not yet developed as commercial airports.

Source : Department of Aviation

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APPENDIX H : LIST OF PEOPLE INTERVIEWED

(A) Government Agencies

1. Agricultural Aviation Division

Mr Lamead Ruang-Thai Head Pilot (Fix-Wing Aircraft)

Air Commodore Sanit Suphawatcharayon Head Pilot (Helicopter)

2. Department of Aviation

Lieutenant Arun Suksri Officer, Air Transport Control Division

Mr Bunthep Vanussabhodikul Chief, Policy and Planning Section

Ms Kittima Krudsiri Officer, Public Relations Section

Mr Jarurat Naksawee Officer, Registration Section, Air Safety Division

Ms Pannee Khanthahirun Chief, Statistic Section

3. Department of Post and Telegraph

Ms Thipsuda Jaravetchasarn Director, Planning Division

4. Meteorological Department

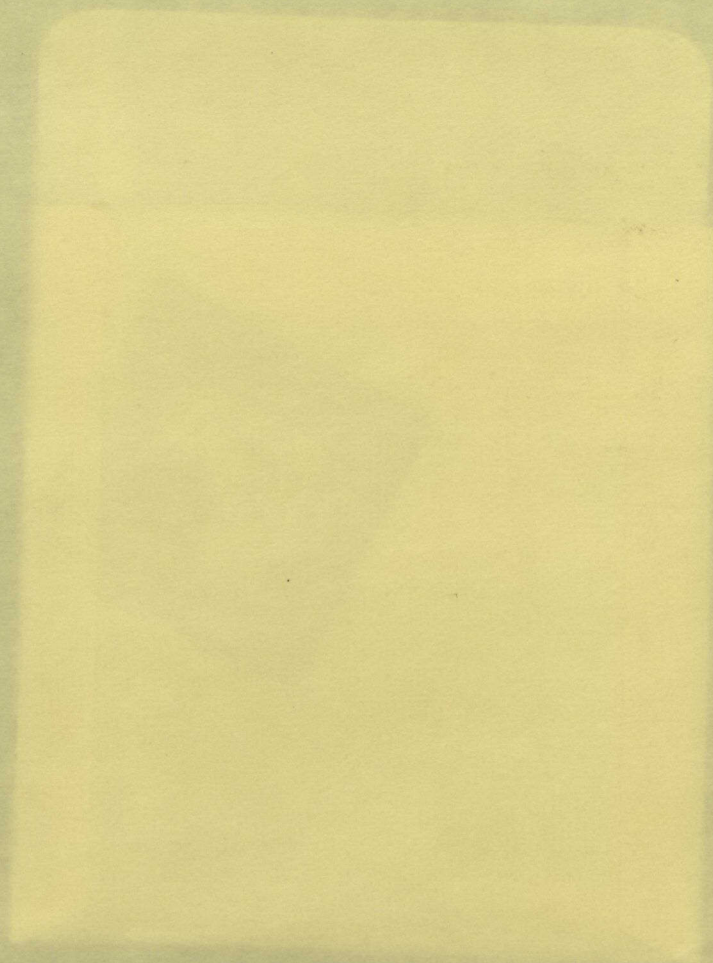
Mr Somwang Martchaiyaphum Officer, Meteorological Observations Division

5. Ministry of Transport and Communications

Mr Puchanee Suksamiti Officer, Office of the Permanent Secretary

6. The Royal Rainmaking Research and Development Institute

Mr Saneh Warit Director



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(B) State Enterprises

1. Aeronautical Radio of Thailand

Ms Sarinee Sangprasit

Head, Promotion & Public Relations Section

2. Airports Authority of Thailand

Wing Commander Santhana Neeyaphan

Director, Public Relations Division

Lieutenant Nrongchai Thanadchangsaeng

Deputy Director, Procurement Division

3. Communications Authority of Thailand

Mr Sathaporn Thasaprasert

Officer, Satellite Telecommunications Division

4. Thai Airways International Co Ltd

Mr Bhisit Kuslaasayamon

Deputy Director, Corporate Planning and International Relations

Ms P...

Officer

(C)

1.

Mr V...

ce President

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Assistant of Thai
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ACCO^{TM/MC}

YELLOW	25970	JAUNE
BLACK	25971	NOIR
BLUE	25972	BLEU
RL BLUE	25973	BLEU RL
GREY	25974	GRIS
GREEN	25975	VERT
TANGERINE	25977	TANGERINE
RED	25978	ROUGE
EX RED	25979	ROUGE EX

MADE IN CANADA BY/FABRIQUE AU CANADA PAR

ACCO CANADIAN COMPANY LIMITED
COMPAGNIE CANADIENNE ACCO LIMITÉE
TORONTO CANADA