

CHAPTER 14 PLANNING OF AIRSPACE USE

CHAPTER 14 PLANNING OF AIRSPACE USE

14.1 GENERAL

The airspace use at the NBIA after completion of the Medium Term Development has been studied based on the facilities planned in Chapter 11. It is assumed in this study that the New Control Tower, ASR/SSR and a new VOR/DME to the Northwest of the existing runway become operational before the Medium Term Development. The results are described under the following headings:

- a) Terminal Control Area
- b) Instrument Approach Procedures

The proposed changes in the responsibilities of Aerodrome and Approach Controllers and in the dimensions of the Control Zone, all described in Section 9.3, are assumed to have been implemented when the ASR/SSR becomes operational (before the Medium Term Development).

14.2 TERMINAL CONTROL AREA

1) Reconfiguration of Terminal Control Area

Taking into account the ASR/SSR coverage and the expeditious air traffic flow in this area, the airspace within a 74 km (40 NM) radius of NOB VOR/DME (21°16'34"N/105°37'18"E) has been configured as a terminal control area as shown in Figure 14.2.1.

2) Development of STAR and SID

Subsequent to the commissioning of the Runway 11R/29L to the south of the existing Runway 11L/29R, Standard Terminal Arrival Routes (STAR) and a Standard Instrument Departure (SID) will be required. The STAR were developed as shown in Figure 14.2.1 and Table 14.2.1. The SID are shown in Figure 14.1.2 and Table 14.1.2. They were developed to avoid the overlapping with the restricted areas in the circumference of the NBIA, except the areas VVR7 and 9 and based on the following assumptions:

- a) a VOR/DME is located at 13.9 km (7.5 NM) NW of the threshold and on the extended center line of the existing Runway 11L;
- b) a NDB is located at 18.5 km (10 NM) NW of the threshold and on the extended center line of the new Runway 11R as a locator for ILS operations for Runway 11R;

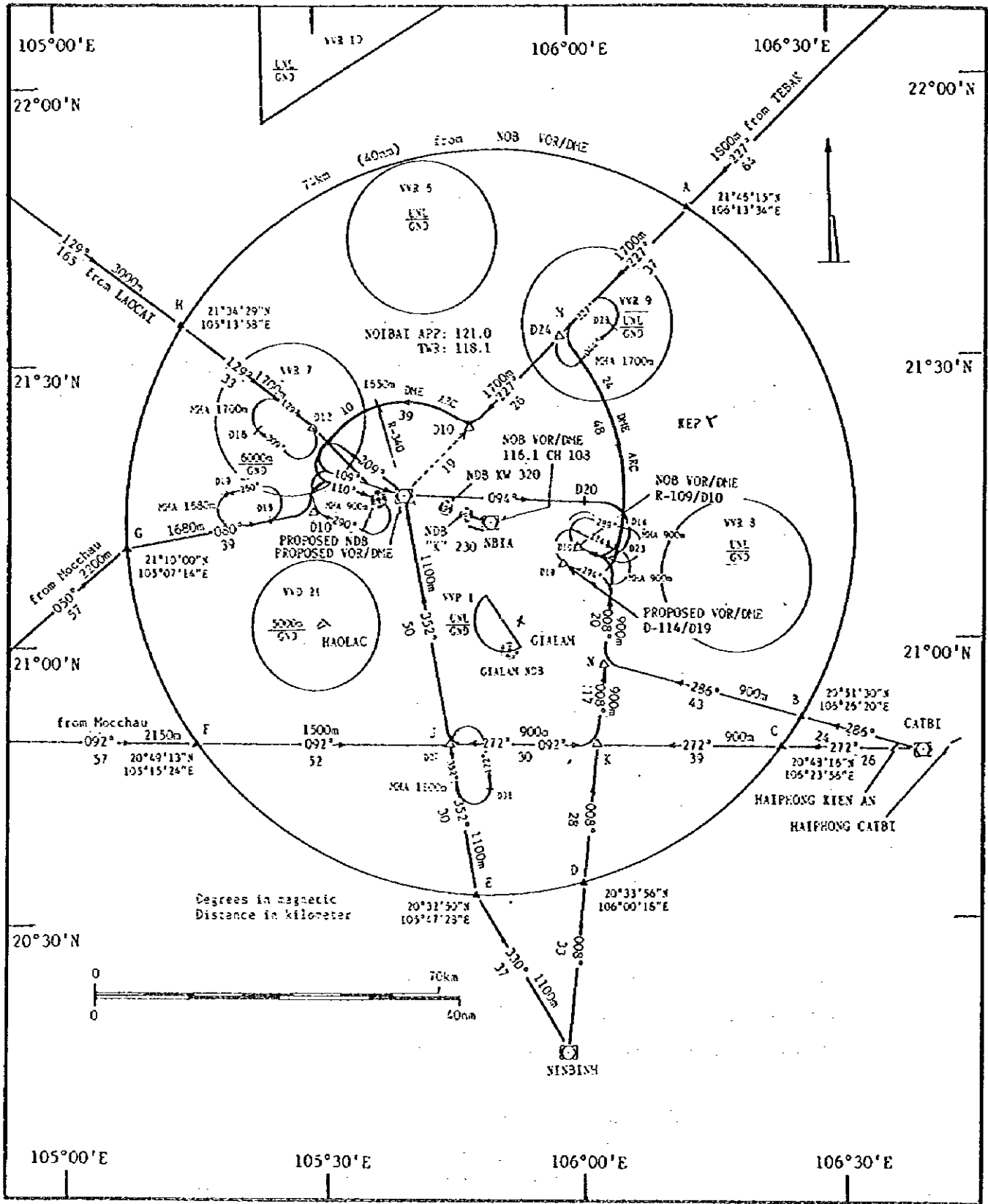


Figure 14.2.1 Standard Terminal Arrival Chart

Table 14.2.1 Standard Terminal Arrival Routes for NBIA

<p>Runway 11 L / R</p> <p>From TEBAK</p> <p>From over point A, descend via "X" VOR/DME (proposed VOR/DME, 14 km / 7.5 NM NW of Runway 11 L threshold) R-047 to D10 of "X", then right turn to intercept and proceed via "X" 10 DME counter clockwise ARC to intercept and proceed :</p> <p>a) via "X" R-289 to "x" for Runway 11 L</p> <p>b) via 290 DEG from "Y" NDB (proposed NDB, 19 km / 10 NM NW of Runway 11 R threshold) to "Y" NDB.</p> <p>Cross Point A at or above 1,800 m, cross "x" R-340 on the ARC at or above 1,650 m, hold over "X" and "Y" at or above 900 m.</p> <p>From LAOCAI</p> <p>From over point H, descend via "X" VOR/DME R-309 to D12, then right turn to intercept and proceed :</p> <p>a) via 320 DEG from "Y" NDB, then to intercept and proceed via "X" R-289 to "X" for Runway 11 L.</p> <p>b) via 320 DEG from "Y" to "Y" NDB for Runway 11 R.</p> <p>Cross Point H at or above 3,000 m, cross "X" D-12 at or above 1,700 m, cross "X" and "Y" at or above 900 m.</p> <p>From MOCCHAU</p> <p>From over point G, descend via "X" VOR/DME R-260 to D10, then left turn to intercept and proceed via "X" 10 DME clockwise ARC to intercept and proceed.</p> <p>a) via "X" R-289 to "X" for Runway 11 L</p> <p>b) via 290 DEG from "Y" NDB to "Y" for Runway 11 R</p> <p>Cross Point G at or above 2,200 m, cross "X" D10 at or above 1,680 m, cross "X" and "Y" at or above 900 m.</p> <p>From NINBINH</p> <p>From over point E, descend via "X" VOR/DME R-172 to "X", then descend via "X" R-309 and left turn within 19 km (10 NM), then to intercept and proceed :</p> <p>a) via "X" R-289 to "X" for Runway 11 L</p> <p>b) via 290 DEG from "Y" NDB to "Y" for Runway 11 R.</p> <p>Cross Point E at or above 1,100 m, hold over "X" and "Y" at or above 900 m.</p> <p>From CATBI</p> <p>From over point C, descend via Catbi VOR/DME R-272 to point J, then right turn to intercept and proceed via "X" R-172 to "X", then descend via "X" R-309 and left turn within 19 km (10 NM) to intercept and proceed :</p> <p>a) via "X" R-289 to "X" for Runway 11 L</p> <p>b) via 290 DEG from "Y" NDB to "Y" NDB for Runway 11 R.</p> <p>Cross Points C and F and "X" VOR/DME at or above 1,100 m.</p> <p>Hold at "X" and "Y" at or above 900 m.</p>

Table 14.2.1 Standard Terminal Arrival Routes for NBIA (Continued)

<p>Runway 29 R/L</p> <p>From TEBAK</p> <p>From over point A, descend via "X" VOR/DME R-047 to point D24 of "X", then left turn to intercept and proceed via "X" 24 DME clockwise ARC to intercept and proceed :</p> <p>a) via NOB VOR/DME R-109 to D10 for Runway 29 L</p> <p>b) via "X" VOR/DME R-114 to D19 for Runway 29 R</p> <p>Cross Points A and M at or above 1,800 m and 1,600 m respectively, cross "X" R-114/D19 and NOB R-109/D10 at or above 900 m.</p> <p>From LAOCAI</p> <p>From over point H, descend via "X" VOR/DME R-309 to "X", then left turn to intercept and proceed via "X" R-094, and right turn within 44 km (D24) and to intercept and proceed :</p> <p>a) via NOB VOR/DME R-109 to D10 for Runway 29 R</p> <p>b) via "X" R-114 to "X" D19 for Runway 29 L</p> <p>Cross Point H at or above 3,000 m, cross "X" R-309 D12 at or above 1,700 m, cross "X" at or above 1,100 m.</p> <p>Hold at NOB R-109/D10 and "X" R-114/D19 at or above 900 m.</p> <p>From MOCCHAU</p> <p>From over point F, descend via Mocchau VOR/DME R-092/Catbi VOR/DME R-272 to point K, then left turn to intercept and proceed via Ninbinh VOR/DME R-008, then left turn to intercept and proceed :</p> <p>a) via NOB VOR/DME R-109 to D10 and hold for Runway 29 R</p> <p>b) via "X" R-114 to D19 and hold for Runway 29 L</p> <p>Cross Points F, J and K at or above 2,150 m, 1,500 m and 900 m respectively . Hold at NOB R-109/D10 and "X" R-114/D19 at or above 900 m.</p> <p>From NINBINH</p> <p>From over point D, descend via Ninbinh VOR/DME R-008 then left turn to intercept and proceed :</p> <p>a) via NOB VOR/DME R-109 to D10 and hold at or above 900 m for Runway 29 L</p> <p>b) via "X" R-114 to D19 and hold at or above 900 m for Runway 29R</p> <p>Cross Point D at an assigned or specified altitude.</p> <p>From CATBI</p> <p>From over point B, descend via Catbi VOR/DME R-286 to point N, then right turn to intercept and proceed via Ninbinh VOR/DME R-008, then left turn to intercept and proceed :</p> <p>a) via NOB VOR/DME R-109 to D10 and hold at or above 900 m for Runway 29L</p> <p>b) via "X" R-114 to D19 and hold at or above 900 m for Runway 29R</p> <p>Cross points B and N at an assigned or specified altitude.</p>
--

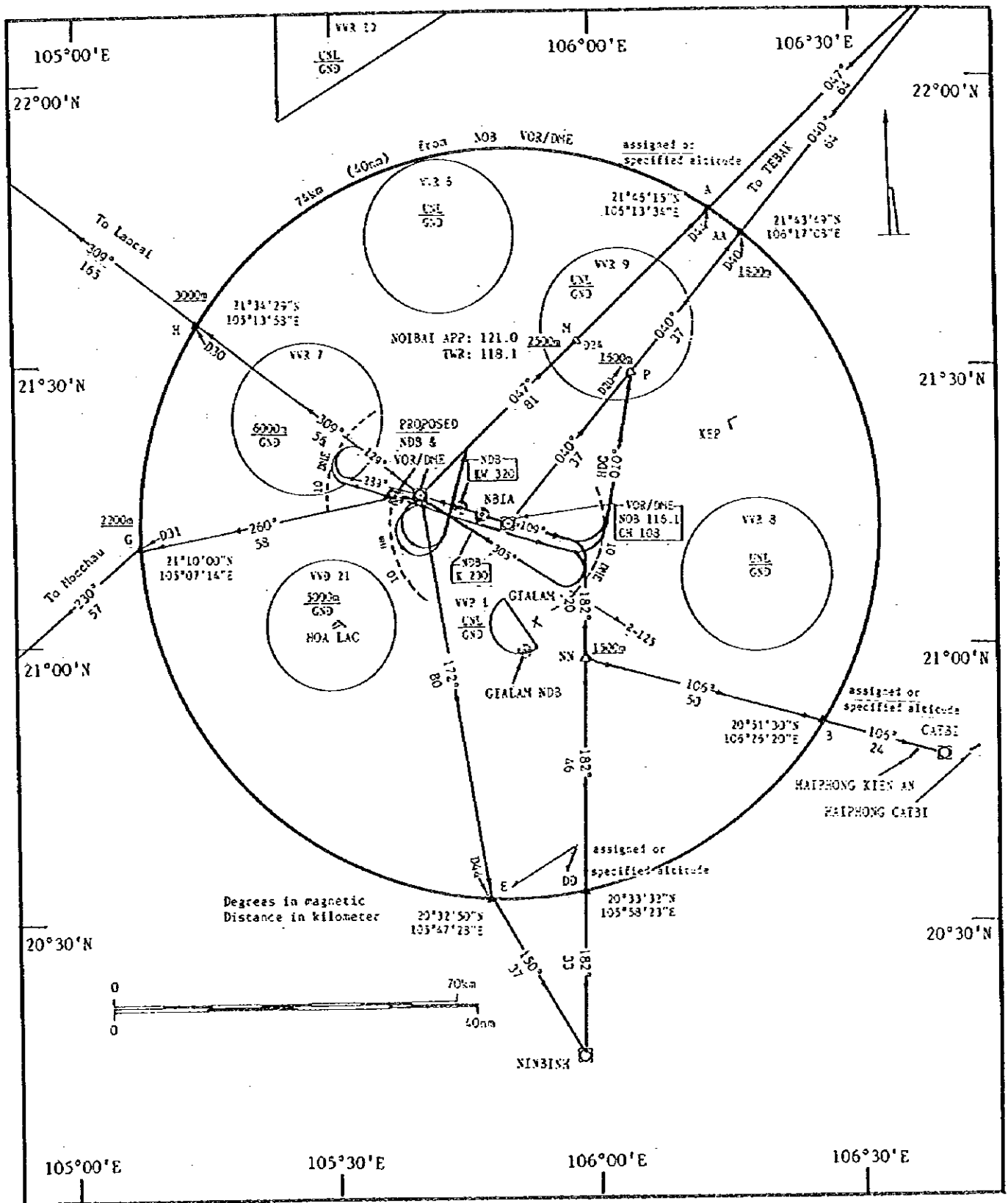


Figure 14.2.2 Standard Instrument Departure Chart

Table 14.2.2 Standard Instrument Departures at NBIA

<p>For TEBAK</p> <p><u>Runway 11 L / R</u></p> <p>Climb runway heading to 800 m or above within 19 km (10 NM), then left turn, climb via heading 010 DEG to intercept and proceed via NOB R-040 to TEBAK. Cross Points P and AA at or above 1,600 m and 1,800 m respectively.</p> <p><u>Runway 29 R/L</u></p> <p>Climb to " X " VOR/ DME to 600 m or above, then left turn within 9 km (5 NM), climb via "X" R-047 to point A. Cross Point M ("X" D24) at or above 2,500 m, cross point A at an assigned or specified altitude by ATC.</p>
<p>For Laocai</p> <p><u>Runway 11 L / R</u></p> <p>Climb runway heading to 800 m or above within 19 km (10 NM), then right turn to intercept and proceed via "X" R-125 to "X", then climb via "X" R-309 to point H. Cross "X" at or above 1,700 m, cross point H at or above 3,000 m.</p> <p><u>Runway 29 R/L</u></p> <p>Climb to "X" to 600 m or above, then right turn, climb via "X" R-309 to point H. Cross "X" R-309 D12 at or above 1,700 m, cross point H at or above 3,000 m.</p>
<p>For Mocchau</p> <p><u>Runway 11 L / R</u></p> <p>Climb runway heading to 800 m or above within 19 km (10 NM), then right turn to intercept and proceed via "X" R-125 to "X", then left turn to intercept and proceed via "X" R-260 to Point G. Cross "X" VOR/DME at or above 1,900 m, cross Point G at or above 2,200 m.</p> <p><u>Runway 29 R/L</u></p> <p>Climb to "X" VOR/DME to 600 m or above, then left turn to intercept and proceed via "X" R-260 to Point G. Cross Point G at or above 2,200 m.</p>

Table 14.2.2 Standard Instrument Departures at NBIA (Continued)

<p>For Ninbinh</p> <p><u>Runway 11 L/R</u></p> <p>Climb runway heading to 800 m or above within 19 km (10 NM), then right turn to intercept and proceed via Ninbinh VOR/DME R-182 to point DD.</p> <p>Cross Point NN at or above 1,500 m, cross point DD at an assigned or specified altitude.</p> <p><u>Runway 29 R/L</u></p> <p>Climb to "X" VOR/DME to 600 m or above, then left turn within 9 km (5 NM), climb via "X" R-172 to point E.</p> <p>Cross Point E at an assigned or specified altitude.</p>
<p>For Catbi</p> <p><u>Runway 11 L/R</u></p> <p>Climb runway heading to 800 m or above within 19 km (10 NM), then right turn, climb via Ninbinh VOR/DME R-182 to point NN, then left turn proceed via Catbi VOR/DME R-106 to point B.</p> <p>Cross Point NN at or above 1,500 m, cross point B at assigned or specified altitude.</p> <p><u>Runway 29 R/L</u></p> <p>Climb to "X" VOR/DME to 600 m or above, then left turn within 9 km (5 NM), climb via "X" R-109 until 35 km (19 NM) from "X", then right turn, climb via Ninbinh VOR/DME R-182 to point NN, then left turn proceed via Catbi VOR/DME R-106 to point B.</p> <p>Cross Point NN at or above 1,500 m, cross point B at assigned or specified altitude.</p>

- c) NDBs at Catbi, Ninbinh, Macchau and Laocai are replaced with VOR/DMEs;
- d) the location of compulsory reporting point "TEBAK" (22°10'30"N/106°40'30"E) remains unchanged; and
- e) the width of the arrival and departure routes is 9.3 km (5 NM) on each side of the route.

14.3 INSTRUMENT APPROACH PROCEDURES

The following instrument approach procedures were planned for the new runway 11R/29L:

- a) NDB/ILS/DME RWY 11R (refer to Figure 14.3.1); and
- b) VOR/DME/NDB RWY 29L (refer to Figure 14.3.2).

The ILS approach to Runway 11R was developed for the Category II operations, using the topographical maps with the scale of 1/50,000 produced in 1965 in Vietnam with the following assumptions:

- a) the threshold elevation of Runway 11R is the same as Runway 11L (12.03m);
- b) glide path angle is 3.0 degrees;
- c) the orientation of the new runway is same as Runway 11L/29R (107°41'03"/287°41'03");
- d) the ILS reference datum is 17 m (56 ft);
- e) runway slope is 0.028%;
- f) the distance between LLZ and threshold is 3,800 m; and
- g) the following parameters for the calculation of the obstacles in the Obstacle Assessment Surfaces (OAS) are used:

Surface	For Cat I	For Cat II
W	$0.028500 x - 8.01$	$0.035800 x - 6.19$
X	$0.028636 x + 0.1888 y - 17.30$	$0.035823 x + 0.238300 y - 21.93$
Y	$0.024904 x + 0.218444 y - 22.37$	$0.032542 x + 0.28544 y - 21.93$
Z	$-0.02500 x - 22.5$	$-0.02500 x - 22.5$

The existing instrument approach procedures: NDB/ILS RWY 11, ILS-DME RWY 11, VOR/DME RWY 29, VOR/DME RWY 11 and NDB RWY 11 will be applicable for the Runway 11L/29R.

Instrument
Approach Chart-ICAO

AERODROME ELEVATION 125
THRESHOLD 11R ELEVATION 135

NDB/ILS/DME RWY 11R

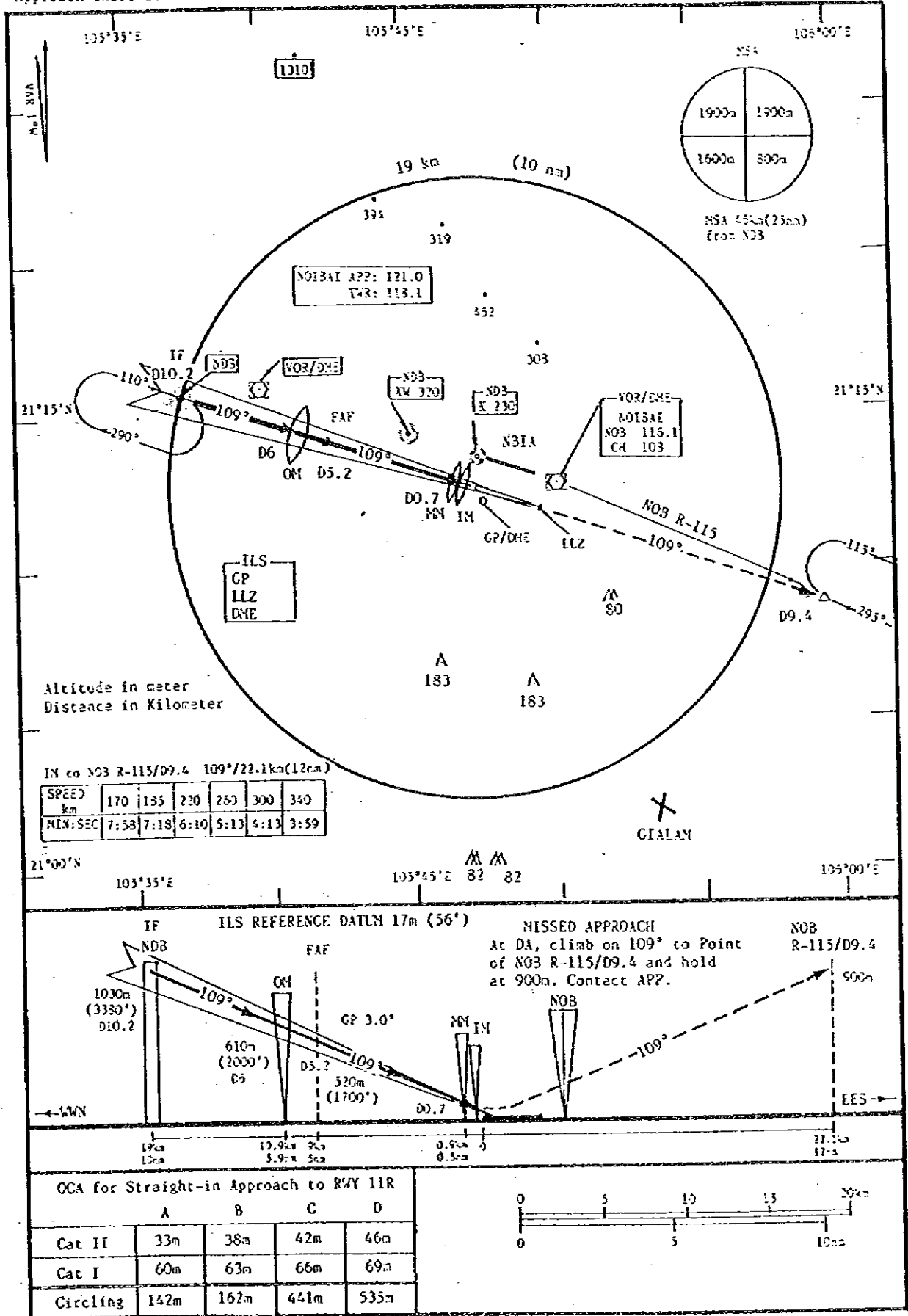
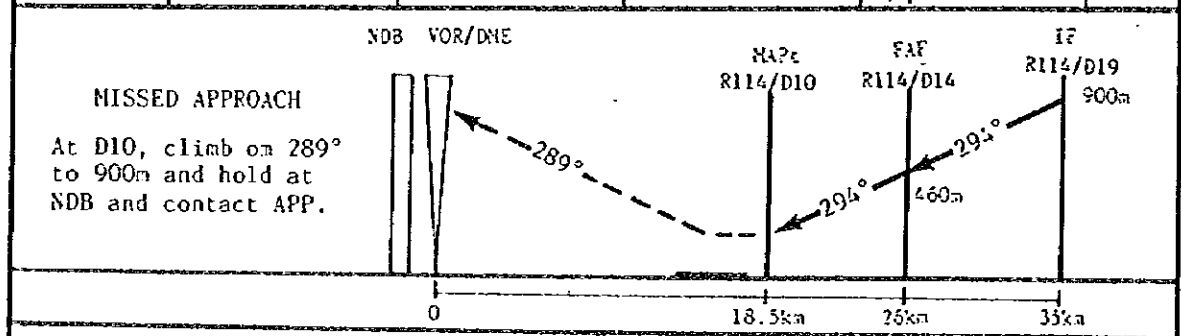
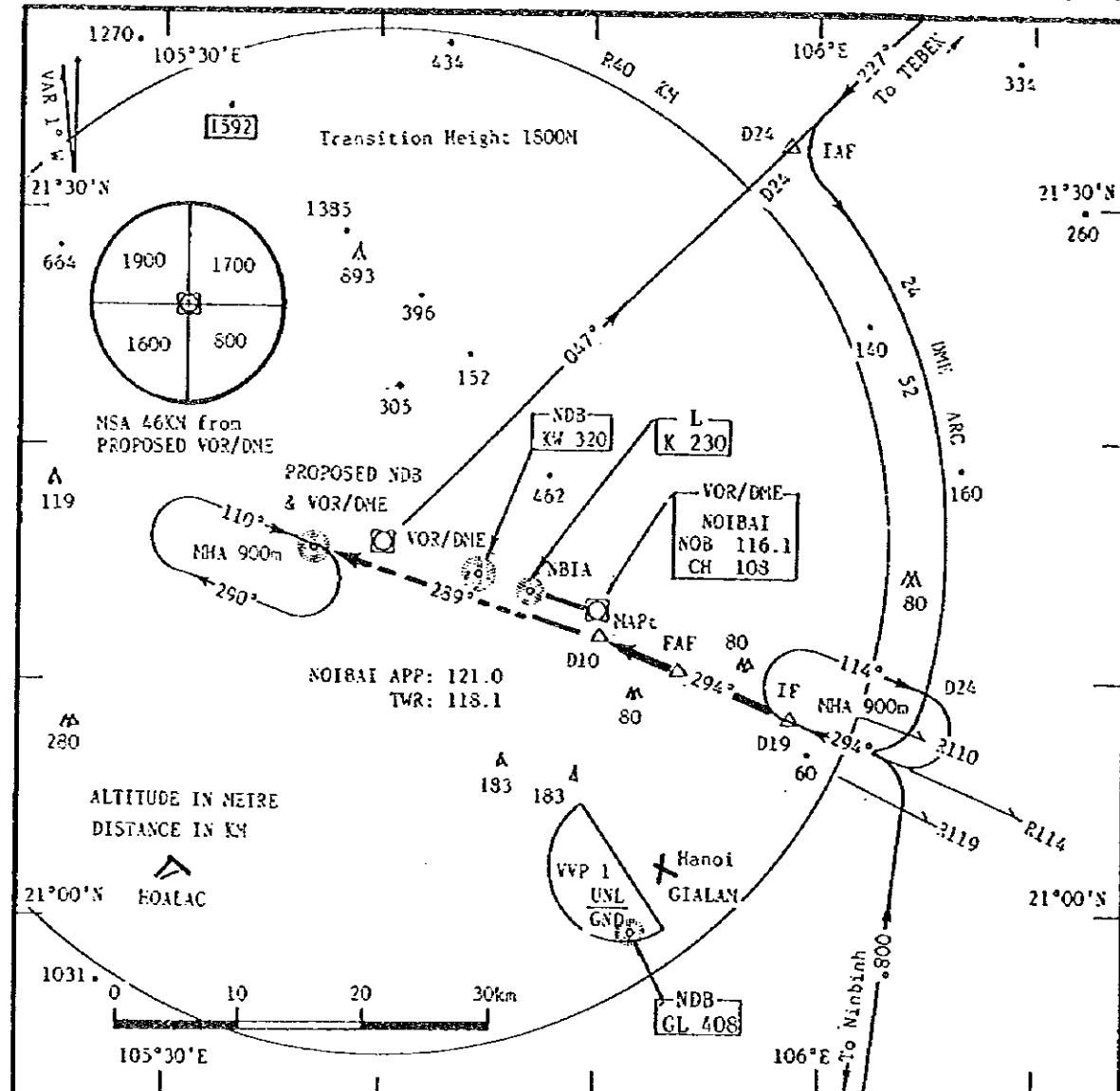


Figure 14.3.1 NDB/ILS/DME RWY 11R

Instrument
Approach
Chart-ICAO

AD Elevation 12M
TSD Elevation 12M

VOR/DME/NDB RWY 29L



OCA FOR RWY 29L					IF to FAF 294°/7.4km (4NN)						
	A	B	C	D	Speed in km	170	185	220	260	300	340
STRAIGHT-IN	111m				Min:Sec	2:37	2:24	2:01	1:42	1:29	1:18
CIRCLING	142m	162m	441m	535m							

Figure 14.3.2 VOR/DME/NDB RWY 29L

CHAPTER 15 COST ESTIMATES

CONFIDENTIAL

CHAPTER 15 COST ESTIMATES

15.1 GENERAL

This chapter provides cost estimates for the Medium Term Development Plan under the following headings.

- a) Estimates of Project Costs
- b) Estimates of Environmental Conservation Costs
- c) Estimates of Operation and Maintenance Costs

15.2 ESTIMATES OF PROJECT COSTS

Project costs are summarized in the Table 15.2.1 and were developed based on the following conditions:

- a) construction costs were estimated based on the 1995 prices for works of international standard quality;
- b) exchange rates were fixed at US\$ 1.00 = VND 11,000 = ¥ 100;
- c) price escalation was not included;
- d) cost for engineering services was estimated to be about 10% of the construction cost; and
- e) contingencies were estimated to be about 10% of the total cost.

15.3 ESTIMATES OF ENVIRONMENTAL CONSERVATION COSTS

Costs of environmental conservation measures (such as environmental monitoring; subsidies for land use control and soundproofing works around the NBIA, etc.) directly related to the Project were estimated to be in the order of US\$ 12 million.

Table 15.2.1 Summary of Project Costs (US\$)

Item	Local	Foreign	Total
Construction Cost	81,210,000	269,840,000	351,050,000
Diversion & Relocation	1,250,000	3,230,000	4,480,000
Diversion of Noi Bai Canal	140,000	330,000	470,000
Diversion of Irrigation Channel	280,000	660,000	940,000
Diversion of Power Transmission Line	10,000	240,000	250,000
Diversion of Telephone Line	10,000	110,000	120,000
Diversion of National Road No. 2	810,000	1,890,000	2,700,000
Airport Civil Works	50,550,000	124,590,000	175,140,000
Earthworks & Drainage	8,280,000	31,670,000	39,950,000
Runway, Taxiway and Apron	27,090,000	63,220,000	90,310,000
Roads & Car Park	2,650,000	21,480,000	24,130,000
Miscellaneous Works	12,530,000	8,220,000	20,750,000
Building Works	25,770,000	59,440,000	85,210,000
New Passenger Terminal Building	21,010,000	49,030,000	70,040,000
Renovation of Passenger Terminal Building	800,000	1,200,000	2,000,000
New Cargo Terminal Building	2,580,000	6,030,000	8,610,000
Other Buildings	1,380,000	3,180,000	4,560,000
Special Equipment	310,000	12,080,000	12,390,000
Airport Utilities	1,070,000	17,630,000	18,700,000
Fuel Supply System	1,750,000	33,250,000	35,000,000
Fire Fighting Vehicles	0	1,800,000	1,800,000
Airport Maintenance Equipment	0	630,000	630,000
Air Navigation System	510,000	17,190,000	17,700,000
Land Acquisition & Compensation	25,920,000	0	25,920,000
Consultancy Services	3,510,000	31,600,000	35,110,000
Contingency	10,860,000	30,060,000	40,920,000
Total Cost	121,500,000	331,500,000	453,000,000

15.4 ESTIMATE OF OPERATION AND MAINTENANCE COSTS

The operation and maintenance costs consist of a) maintenance costs, b) personnel costs, overhead and other labor costs and c) utilities costs. They are respectively estimated as follows:

15.4.1 Maintenance Costs

The implementation of the Project will require additional cost to maintain expanded and upgraded facilities. The cost is estimated by multiplying the construction cost by percentage rates, which differs from facility to facility. The details of the estimation method is described in Appendix 15.4.1.

15.4.2 Personnel Costs, Overhead and Other Labor Costs

It has been recommended in Section 13.6 that the number of staff at Noi Bai Airport should be reduced to correct the current overstaffed situation. It has been estimated that the adequate level of staff number as of 1995 is 433 instead of actual 856. On the other hand, the number of staff to manage, operate and maintain the airport will increase as the airport becomes larger. In consideration of the above two factors, the number of staff is estimated based on the reference staff number of 433 in 1995 and the staff growth rate, which is assumed to be the growth rate of air traffic less the rate of productivity improvement of the airport staff. It is also assumed that the real personnel related costs (salaries, bonuses, pensions and insurance) per staff will increase at the same rate as the growth rate of GDP per capita in Vietnam while labor productivity will improve at the same rate. The overhead and other labor costs are estimated by using percentage rates obtained from the financial statements of the NAR.

The detailed description on the estimation of personnel costs, overhead and other labor costs are shown in Appendix 15.4.2. It is noted that only the incremental costs required for expended facilities and improved functions attribute to the Project. Therefore, the cost required for operations of existing facilities (including the T1 Terminal) has been excluded from the project cost.

15.4.3 Utilities Costs

The utilities costs consisting of electricity charges and fuel costs are estimated by multiplying the anticipated consumption by a unit rate of charge as shown in Appendix 15.4.3. For the same reason mentioned in the previous section, the utilities cost required for operations of existing facilities has been excluded from the project costs.

The operation and maintenance costs are estimated as a total of the above three categories of the costs. The estimate up to the year 2025 is shown in Table 15.4.1.

Table 15.4.1 Estimate of Operation and Maintenance Costs

Unit: US\$ '000 in 1995 Prices

Year	Maintenance Costs	Personnel, Overhead and Other Labor Costs	Utilities Costs	Total Operation and Maintenance Costs
2006	5,418	169	446	6,033
2007	5,418	358	446	6,222
2008	5,418	572	446	6,436
2009	5,418	810	446	6,674
2010	5,418	1,147	446	7,011
2011	5,418	1,435	446	7,299
2012	5,418	1,749	446	7,614
2013	5,418	2,097	446	7,961
2014	5,418	2,210	446	8,074
2015	5,418	2,327	446	8,191
2016	5,418	2,445	446	8,309
2017	5,418	2,567	446	8,431
2018	5,418	2,697	446	8,561
2019	5,418	2,832	446	8,696
2020	5,418	2,975	446	8,840
2021	5,418	3,123	446	8,987
2022	5,418	3,280	446	9,144
2023	5,418	3,445	446	9,309
2024	5,418	3,619	446	9,483
2025	5,418	3,802	446	9,666

Note: Additional costs required for expended facilities and upgraded functions only.

CHAPTER 16 FINANCIAL AND ECONOMIC ANALYSES

CONFIDENTIAL - SECURITY INFORMATION

CHAPTER 16 FINANCIAL AND ECONOMIC ANALYSES

16.1 FINANCIAL ANALYSES AND EVALUATION

16.1.1 General

This section provides a detailed financial analysis of the medium-term development plan for Noi Bai International Airport, which is supposed to be implemented after the completion of the T1 Project. The financial internal rate of returns (FIRR) is firstly estimated, and then detailed analyses are carried out based on income statements (profit and loss account) and fund statements (cash flow forecast). The sensitivity analysis is also undertaken to show the scale of financial risks involved in the Project.

16.1.2 "Without Project" (WOP) Case and "With Project" (WP) Case

Since the medium-term development plan is as additional investment plan after the T1 Project, its financial (as well as economic) returns are incremental revenues generated through the expansion of airport capacity. The evaluation of the medium-term development plan should, therefore, be made by comparing revenues and costs between the following two cases:

- With Project (WP) Case: The medium-term development plan will be implemented and airport capacity will be increased to 10.6 mppa¹ (million passengers per annum), which is the maximum allowable capacity of the medium-term development plan.
- Without Project (WOP) Case: No investments will be made after the T1 Project, and thus airport capacity will remain at the maximum of the T1 Project, i.e., 5.5 mppa².

The number of passengers, volume of cargo and aircraft movements in the both cases, as well as those incremental values made possible by the Project, are shown in Appendices 16.1.1, 16.1.2 and 16.1.3.

16.1.3 General Assumptions

The same general assumptions established in Section 9.7.3 apply to the analysis in this section.

¹ The maximum allowable capacity of the medium-term development plan is estimated as about 120% of the design capacity based on the suggestion from the IATA's standard on level of service (LOS).

² Refer to Section 9.7.2.

16.1.4 Costs of the Project

The costs of the Project will include: 1) construction costs, 2) operation and maintenance costs and 3) the cost for environmental mitigation measures. They have been estimated in Sections 15.2, 15.4 and 15.3 respectively. The annual construction cost and other additional costs are shown in Appendices 16.1.4, 16.1.5 and 16.1.6.

16.1.5 Revenues of the Project

The sources of airport revenues and the levels of charges have been described in Section 9.7.5. Those rates, which have been determined in that section from international comparisons, are summarized in Table 16.1.1.

The anticipated incremental revenues from those charges are shown in Appendices 16.1.7 through 16.1.10.

16.1.6 Financial Evaluation

1) Financial Internal Rate of Returns (FIRR)

The costs and revenues which will incrementally be incurred by implementing the Project are tabulated in Table 16.1.2. The financial internal rate of returns (FIRR) is calculated as 3.1%. The result is significantly lower than the FIRR of 4.9%, which has been estimated for the combined case of the medium- and long-term development plans in Section 9.7.6. The reason for the lower FIRR in the medium-term development is that it requires large investments for the construction of a new runway and taxiways, land acquisition and compensation, etc. while the main scope of the long-term development plan will be the expansion of terminal capacity only.

The result suggests that the Project is unfeasible at commercial interest rates, which are normally 7-8%. The injection of state subsidies and/or the use of low interest loans are, therefore, indispensable for the implementation of the Project.

2) Income Statements and Fund Statements

Income and fund statements are produced to show how the Project can actually be financed, and to determine whether the Project can produce enough revenues to cover interest on loans and their principal repayment.

Table 16.1.1 Projected Airport Charges

Airport Charges	Rate		Remarks
Landing Charge for International Flights (per landing)	JJ (350 tons) LJ (220 tons) MJ (140 tons) SJ (60 tons) TP (20 tons)	US\$2,075 US\$1,225 US\$425 US\$210 US\$65	No change from the present rates
Landing Charge for Domestic Flights (per landing)	JJ (350 tons) LJ (220 tons) MJ (140 tons) SJ (60 tons) TP (20 tons)	US\$1,038 US\$613 US\$213 US\$105 US\$33	
Parking Charge for International Flights (per parking of first 8-12 hours)	JJ (350 tons) LJ (220 tons) MJ (140 tons) SJ (60 tons) TP (20 tons)	US\$1,330 US\$760 US\$532 US\$228 US\$76	No change from the present rates
Parking Charge for Domestic Flights (per parking of first 8-12 hours)	JJ (350 tons) LJ (220 tons) MJ (140 tons) SJ (60 tons) TP (20 tons)	US\$665 US\$380 US\$266 US\$114 US\$38	
International Passenger Service Charge (per departure)		US\$12	70% up
Domestic Passenger Service Charge (per departure)		VND30,000	100% up
Equipment Rental in International Passenger Terminal (per departing and arriving passenger)		US\$0.8	Newly introduced
Equipment Rental in Domestic Passenger Terminal (per departing and arriving passenger)		US\$0.2	
Car Parking Charge (per entry)		VND10,000	100% up
Concession Revenue from International Passenger Terminal (per departing and arriving passenger)*		US\$2.0	Newly introduced
Concession Revenue from Domestic Passenger Terminal (per departing and arriving passenger)*		US\$0.2	
Space Rental in International Passenger Terminal (per month per sq.m)		US\$25	20% up
Space Rental in Domestic Passenger Terminal (per month per sq.m)		US\$12.5	
Space Rental in International Cargo Terminal (per month per sq.m)		US\$15	Newly introduced
Space Rental in Domestic Cargo Terminal (per month per sq.m)		US\$7.5	
Advertisement Revenue from Int'l Passenger Terminal (per month per sq.m)**		US\$5.0	20% up
Advertisement Revenue from Domestic Passenger Terminal (per month per sq.m)**		US\$2.5	
Fuel Surcharge (per liter)		US\$0.015	Newly introduced

Note*: For revenue calculation purpose only. Actual rates of concession fees are usually set at various percentage rates of turnover depending on the type of business.

Note**: For revenue calculation purpose only. Actual rates of advertising fee are determined depending on the type, size and location of advertisements.

Table 16.1.2 Comparison of Costs and Revenues - Medium-term Development Plan

Unit: US\$'000 at 1995 Prices

Year	Costs										Revenues										Total Revenue	Operating Profits
	Const- ruction Cost (1)	Mainte- nance Cost (2)	Person- nel, Overhead & Other (3)	Utilities Cost (4)	Environ. Mitigation Cost (5)	Total Cost (6)=(1)+(5)	Landing Charges (7)	Parking Charge (8)	Passenger Service Charge (9)	Terminal Equipment Charge (10)	Conce- ssion Fee (11)	Car Parking Charge (12)	Passenger Terminal Rent (13)	Cargo Terminal Rent (14)	Adver- tise- ment (15)	Fuel Surcharge (16)	(17)=(7)+(11)+(12)+(13)+(14)+(15)+(16)	(18)=(17)-(6)				
1995																						
1996																						
1997	1,426					1,426												-1,426				
1998	13,336					13,336												-13,336				
1999	22,991					22,991												-22,991				
2000	5,555					5,555												-5,555				
2001	15,776					15,776												-15,776				
2002	77,328					77,328												-77,328				
2003	115,234					115,234												-115,234				
2004	136,689					136,689												-136,689				
2005	64,568					64,568												-64,568				
2006	386	5,418	169	446	240	6,659	1,135	80	1,583	228	480	185	899	1,215	976	6,890	231					
2007		5,418	358	446	240	6,462	2,409	168	3,324	478	1,008	387	899	1,215	1,953	11,950	5,488					
2008		5,418	572	446	240	6,676	3,863	268	5,239	753	1,591	608	899	1,215	2,930	17,475	10,799					
2009		5,418	810	446	240	6,914	5,506	380	7,343	1,055	2,231	849	899	1,215	3,906	23,494	16,580					
2010		5,418	1,147	446	240	7,251	7,360	505	9,649	1,386	2,934	1,113	899	1,215	4,889	30,061	22,810					
2011		5,418	1,435	446	240	7,299	9,046	619	11,703	1,681	3,564	1,345	899	1,215	5,354	35,536	28,237					
2012		5,418	1,749	446	240	7,614	10,910	743	13,916	1,999	4,243	1,594	899	1,215	5,819	41,447	33,834					
2013		5,418	2,097	446	240	7,961	12,973	879	16,311	2,342	4,979	1,862	899	1,215	6,284	47,855	39,894					
2014		5,418	2,210	446	240	8,074	12,973	879	16,311	2,342	4,979	1,862	899	1,215	6,284	47,855	39,781					
2015		5,418	2,327	446	240	8,191	12,973	879	16,311	2,342	4,979	1,862	899	1,215	6,284	47,855	39,663					
2016		5,418	2,445	446	240	8,309	12,973	879	16,311	2,342	4,979	1,862	899	1,215	6,284	47,855	39,546					
2017		5,418	2,567	446	240	8,431	12,973	879	16,311	2,342	4,979	1,862	899	1,215	6,284	47,855	39,424					
2018		5,418	2,697	446	240	8,561	12,973	879	16,311	2,342	4,979	1,862	899	1,215	6,284	47,855	39,293					
2019		5,418	2,832	446	240	8,696	12,973	879	16,311	2,342	4,979	1,862	899	1,215	6,284	47,855	39,159					
2020		5,418	2,975	446	240	8,840	12,973	879	16,311	2,342	4,979	1,862	899	1,215	6,284	47,855	39,015					
2021		5,418	3,123	446	240	8,987	12,973	879	16,311	2,342	4,979	1,862	899	1,215	6,284	47,855	38,867					
2022		5,418	3,280	446	240	9,144	12,973	879	16,311	2,342	4,979	1,862	899	1,215	6,284	47,855	38,711					
2023		5,418	3,445	446	240	9,309	12,973	879	16,311	2,342	4,979	1,862	899	1,215	6,284	47,855	38,545					
2024		5,418	3,619	446	240	9,483	12,973	879	16,311	2,342	4,979	1,862	899	1,215	6,284	47,855	38,371					
2025	-86,783	5,418	3,802	446	240	-77,117	12,973	879	16,311	2,342	4,979	1,862	899	1,215	6,284	47,855	124,972					

FIRR 3.1%
 NPV (at 2% discount rate) 63,813
 NPV (at 8% discount rate) -110,308

It is necessary to assume certain financing conditions for the preparation of income and fund statements. As clarified in the previous section, the state subsidies and/or soft loans are indispensable for the implementation of the Project. It is reasonable to assume following conditions as a Base Case of the present financial examination.

- A state subsidy is used to finance 15% of the total construction cost.
- A soft loan with an interest rate of 2.3% per annum and a repayment period of 20 years, after 10 year grace period, will be used to finance 85% of the total construction cost. These borrowing terms are equivalent to those for Japan's OECF loans presently available to Vietnam.
- Short-term loans with an interest rate of 6% per annum and a repayment period of one year will be used as working capital to finance deficits in cash flows.

Income and fund statements based on the above financing conditions are shown in Tables 16.1.3 and 16.1.4 respectively. The major findings from those statements are as follows:

- The income statement shows that the accumulated current profit will become positive in 2017, i.e., 12 years after inauguration of the medium-term development plan.
- The fund statement indicates net cash flow will be positive (there will be surplus cash) in 2011, 6 years after inauguration of the medium-term development plan.
- The fund statement also indicates that the accumulated net cash inflow (accumulated surplus cash) will exceed the outstanding balance of the soft loan in 2023, 18 years after inauguration of the medium-term development plan, meaning that the soft loan can be cleared in that year.
- The level of working capital required is very large. It will reach US\$27 million in 2007, which is 2.3 times operating revenues or 5.0 times operating profit in that year. This means that the financial position of the Project will be critical in the early years of operation.
- The cover ratio³, which indicates the security of soft loan financing from the lender's point of view, is 1.56. This value is in the lowest range of the normal requirement of 1.5-2.0.

³ Accumulative net cash flow cover ratio (AC-NC CR) is used in the present analysis. It is defined as:
$$\text{AC-NC CR} = \frac{(\text{Accumulated Operating Profit} - \text{Accumulated Short-term loan Interest Payments})}{(\text{Soft Loan Principal} + \text{Accumulated Soft Loan Interest Payments})}$$

The cover ratio of 1.0 means that the project will generate revenues just enough to pay operating cost, interest and principal repayment of the soft loan, and short-term loan interest.

Table 16.1.3 Income Statement - Medium Term Development Plan: Base Case

Year	Operating Revenue	Operating Cost	Operating Profit/Loss	Depreciation	Interest Payment		Short Loan	Current Profit/Loss	Accumulated Current Profit
					Soft Loan	(5)			
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)	(7)	(8)	
1996									
1997									
1998									
1999									
2000									
2001									
2002									
2003									
2004									
2005									
2006	6,830	6,273	617	15,869	1,575			-1,575	
2007	11,950	6,462	5,488	15,869	4,225	94		-5,894	
2008	17,475	6,676	10,799	15,869	7,369	354		-13,617	
2009	23,494	6,914	16,580	15,869	8,834	817		-38,539	
2010	30,061	7,251	22,810	15,869	8,863	1,360		-59,143	
2011	35,536	7,259	28,237	15,869	8,863	1,644		-74,720	
2012	41,447	7,614	33,834	15,869	8,863	1,627		-84,499	
2013	47,855	7,961	39,894	15,869	8,863	1,261		-87,683	
2014	47,855	8,074	39,781	15,869	8,863	500		-84,676	
2015	47,855	8,191	39,663	15,869	8,863			-75,576	
2016	47,855	8,309	39,546	15,869	8,863			-69,971	
2017	47,855	8,431	39,424	15,869	8,420			-64,036	
2018	47,855	8,561	39,293	15,869	7,976			-59,335	
2019	47,855	8,696	39,159	15,869	7,976			-54,036	
2020	47,855	8,840	39,015	15,869	7,533			-49,275	
2021	47,855	8,987	38,867	15,869	7,090			-44,188	
2022	47,855	9,144	38,711	15,869	6,647			-39,541	
2023	47,855	9,309	38,545	15,869	6,204			-34,900	
2024	47,855	9,483	38,371	15,869	5,761			-30,269	
2025	47,855	9,666	38,189	15,869	5,318			-25,638	
2026	47,855	9,666	38,189	9,546	4,875			-21,007	
2027	47,855	9,666	38,189	9,546	4,431			-16,376	
2028	47,855	9,666	38,189	9,546	3,988			-11,745	
2029	47,855	9,666	38,189	9,546	3,545			-7,114	
2030	47,855	9,666	38,189	9,546	3,102			-2,483	
2031	47,855	9,666	38,189	9,546	2,659			2,148	
2032	47,855	9,666	38,189	9,546	2,216			6,781	
2033	47,855	9,666	38,189	9,546	1,773			13,514	
2034	47,855	9,666	38,189	9,546	1,329			20,247	
2035	47,855	9,666	38,189	9,546	886			27,080	
2036	47,855	9,666	38,189	9,546	443			33,913	

Unit: US\$ '000 at 1995 Prices

Financing Conditions
 State Subsidy:
 Soft Loan:
 Interest Rate=
 Repayment Period=
 Grace Period=
 Short-term Loan:
 Interest Rate=
 Repayment Period=
 15% of the Total Construction Cost
 85% of the Total Construction Cost
 2.3% per annum
 20 years (after grace period)
 10 years
 Working Capital (for deficit financing)
 6% per annum
 1 year

Table 16.1.4 Fund Statement - Medium-term Development Plan: Base Case

Year	Cash Inflow										Cash Outflow				Net Cash Inflow		Accumulated Net Cash Inflow		Soft Loan Outstanding		Short-term Loan Outstanding
	Operating Revenue		State Budget		Borrowing		Total		Operating Cost		Interest		Investment		Debt Requirement		Total	Net Cash Inflow	Soft Loan Outstanding	Short-term Loan	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)			
1996																					
1997			1,426				1,426														
1998			13,336				13,336														
1999			22,991				22,991														
2000			5,555				5,555														
2001			15,776				15,776														
2002			8,867		68,461		8,867				68,461								68,461		
2003					115,234						115,234								185,695	1,575	
2004					136,689					94	136,689								320,384	5,894	
2005					64,568					354	64,568								364,952	13,617	
2006	6,890				386				6,279	8,854	817							385,338	22,670		
2007	11,950								6,465	8,863	1,360							385,338	27,405		
2008	17,475								6,676	8,863	1,644							385,338	27,113		
2009	23,494								6,914	8,863	1,627							385,338	21,023		
2010	30,061								7,251	8,863	1,261							385,338	8,336		
2011	35,536								7,299	8,863	500							385,338			
2012	41,447								7,614	8,863								366,071			
2013	47,855								7,961	8,420								346,804			
2014	47,855								8,074	7,976								327,537			
2015	47,855								8,191	7,533								308,270			
2016	47,855								8,309	7,090								289,004			
2017	47,855								8,431	6,647								269,737			
2018	47,855								8,561	6,204								250,470			
2019	47,855								8,696	5,761								231,203			
2020	47,855								8,820	5,318								211,936			
2021	47,855								8,947	4,875								192,669			
2022	47,855								9,144	4,431								173,402			
2023	47,855								9,309	3,988								154,135			
2024	47,855								9,483	3,545								134,868			
2025	47,855								9,666	3,102								115,601			
2026	47,855								9,866	2,659								96,334			
2027	47,855								9,666	2,216								77,068			
2028	47,855								9,666	1,773								57,801			
2029	47,855								9,666	1,329								38,534			
2030	47,855								9,666	886								19,267			
2031	47,855								9,666	443								0			

Unit: US\$ 1000 in 1995 Prices
 Cover Ratio = 1.56
 Maximum Short-term Loan Outstanding = 27,405

3) Sensitivity Test

The sensitivity test provides information on how the feasibility of the Project will be affected by possible changes in air traffic levels, construction costs, rates of interest, etc.

The IRR approach can analyzes financial returns of the Project against the slower growth of air traffic and the rise in construction cost as follows:

Table 16.1.5 Sensitivity Teat - IRR Approach

Case	FIRR	Table or Appendix No. to be Referred
Base Case	3.1%	Table 16.1.2
Low Forecast of Air Traffic ⁴ (approximately down by 35%)	2.0%	Appendix 16.1.11
Construction Cost up by 20%	2.0%	Appendix 16.1.12

The already-low FIRR of the Project will further worsen if air traffic grows in line with the low forecast or if the construction cost is 20% higher than estimated. The corresponding analyses with income and fund statements are indicated in Table 16.1.6.

⁴ It is assumed that the implementation schedule of the Project will be delayed by 3 years in consideration of longer usability of the T1 Terminal. The operation of the medium-term development plan will start in 2009 in stead of 2006 in this case.

Table 16.1.6 Sensitivity Test - Lower Air Traffic Growth and Higher Construction Cost

Case	Accumulated Current Profit turns to Positive	Net Cash Inflow becomes Positive	Accumulated Net Cash Inflow Greater than Soft Loan Outstanding	Maximum Short-term Loan Requirements	Cover Ratio	Table or Appendix No. to be Referred
Base Case s=15% i = 2.3% RP=20 years GP=10 years i'=6.0%	After 12 years of operation	After 6 years of operation	After 18 years of operation	US\$27 million	1.56	Tables 16.1.5 and 16.1.6
Low Forecast of Air Traffic (approximately down by 35%)	17 years	12 years	21 years	US\$33 million	1.35	Appendices 16.1.13 and 16.1.14
Construction Cost up by 20%	17 years	8 years	21 years	US\$36 million	1.29	Appendices 16.1.15 and 16.1.16

Note: s: Percentage of cost financed by the state subsidy
i: Interest rate of soft loan
RP: Repayment period of soft loan (after grace period)
GP: Grace period of soft loan
i': Interest rate of working capital (one year repayment period)

In these cases, all the financial indicators will worsen, as anticipated. The cover ratio will fall below the normal requirement of 1.5-2.0. It is preferable that more of state subsidies will be used to safeguard a possible slowdown in air traffic growth or a unexpected rise in construction cost.

The income and fund statements are also useful for examining the financial sensitivity of the Project against changes in financing conditions. The following table summarizes key financial indicators if the interest rate, repayment period or grace period of the soft loan are changed, or the interest rate of working capital is increased.

Table 16.1.7 Sensitivity Test - More Stringent Financing Conditions

Case	Accumulated Current Profit turns to Positive	Net Cash Inflow becomes Positive	Accumulated Net Cash Inflow Greater than Soft Loan Outstanding	Maximum Short-term Loan Requirements	Cover Ratio	Table or Appendix No. to be Referred
Base Case s=15% i = 2.3% RP=20 years GP=10 years i'=6.0%	After 12 years of operation	After 6 years of operation	After 18 years of operation	US\$27 million	1.56	Tables 16.1.5 and 16.1.6
Case 1A Higher Soft Loan Interest Rate i=3.0%	15 years	9 years	20 years	US\$41 million	1.42	Appendices 16.1.17 and 16.1.18
Case 1B Shorter Repayment Period RP=15 years	12 years	8 years	18 years	US\$27 million	1.26	Appendices 16.1.19 and 16.1.20
Case 1C Shorter Grace Period GP=5 years	13 years	15 years	18 years	US\$93 million	1.23	Appendices 16.1.21 and 16.1.22
Case 2 Higher Short-term Loan Interest Rate i'=9.0%	12 years	6 years	18 years	US\$29 million	1.55	Appendices 16.1.23 and 16.1.24

Note: s: Percentage of cost financed by the state subsidy
i: Interest rate of soft loan
RP: Repayment period of soft loan (after grace period)
GP: Grace period of soft loan
i': Interest rate of working capital (one year repayment period)

In the above table, the Cases 1A, 1B and 1C show the influence of more stringent borrowing conditions for the soft loan on the financial feasibility of the Project. The financial indicators will worsen significantly in all of these cases. Especially, the case of a shorter grace period (Case 1C) will lead to very high short-term loan requirements for working capital.

On the other hand, in the case of a higher interest rate of short-term loans (Case 2), the financial indicators are not much worse than those of the Base Case.

These results means that a successful implementation of the Project will require generous terms for the soft loan such as those assumed as the Base Case of the present analysis.

16.2 ECONOMIC ANALYSES AND EVALUATION

16.2.1 General

This section evaluates the economic viability of the medium-term development plan, as a separate analysis from the combined evaluation of the medium- and long-term development plans in Section 9.8. The economic returns of the Project are calculated in terms of the economic internal rate of returns (EIRR) for the Base Case, and then the sensitivity tests are carried out to show the effects of slower air traffic growth and increased construction cost on the EIRR of the Project.

16.2.2 Methodology and General Assumptions

The methodology of the analysis and the associated general assumptions established in Sections 9.8.2 and 9.8.3 apply to the analysis in this section.

16.2.3 Economic Costs of the Project

The costs of the Project, consisting of: 1) construction costs, 2) operation and maintenance costs and 3) the cost for environmental mitigation measures, estimated in Sections 15.2, 15.4 and 15.3, are converted into economic prices for the analysis. The detailed estimates are shown in Appendices 16.2.1, 16.2.2 and 16.2.3

16.2.4 Economic Benefits of the Project

The following benefits are quantified as economic returns from the Project. (Refer to Section 9.8.5 for detailed explanations and to respective appendices numbers (in the parentheses below) for estimate details)

- 1) Time saving benefit to business passengers on international routes
(Appendices 16.2.4 and 16.2.5)
- 2) Time saving benefit to business passengers on domestic routes
(Appendices 16.2.6 and 16.2.7)
- 3) Benefit from increased tourist passengers on international routes
(Appendices 16.2.8 and 16.2.9)
- 4) Benefit from increased tourist passengers on domestic routes
(Appendices 16.2.10 and 16.2.11)
- 5) Benefit from increased cargo
(Appendices 16.2.12 and 16.2.13)

16.2.5 Economic Evaluation

1) Economic Internal Rate of Returns (EIRR)

The economic cost and benefits which will be incrementally incurred by implementing the Project are compared in Table 16.2.1 on the next page. The economic internal rate of returns (EIRR) is estimated as 19.5%.

The value is slightly lower than the EIRR for the combined case of the medium- and long-term development plans (21.3%) in Section 9.8.6; however, much higher than the opportunity cost of capital of 12%. The Project is, therefore, expected to produce economic returns to the national economy great enough to justify its implementation.

2) Sensitivity Test

The sensitivity test of the economic analysis is undertaken to evaluate how the EIRR varies against the slower growth of air traffic and the rise in construction cost. The estimated EIRRs of the respective cases appear in Table 16.2.2.

Table 16.2.2 Sensitivity Test - Economic Analysis

Case	EIRR	Table or Appendix No. to be Referred
Base Case	19.5%	Table 16.2.1
Low Forecast of Air Traffic ⁵ (approximately down by 35%)	17.0%	Appendix 16.2.14
Construction Cost up by 20%	17.6%	Appendix 16.2.15

These results indicate that the feasibility of the Project is sound even when air traffic grows in line with the low forecast or the construction cost is 20% higher than estimated, meaning that the Project will be of clear benefits for the Vietnamese economy.

⁵ It is assumed that the implementation schedule of the Project will be delayed by 3 years in consideration of longer usability of the T1 Terminal. The operation of the medium-term development plan will start in 2009 in stead of 2006 in this case.

Table 16.2.1 Comparison of Economic Costs and Benefits - Medium-term Development Plan

Unit: 000 US\$ at 1995 Prices

Year	Costs					Benefits										Total Benefits	Net Benefits	
	Construction Cost	Increased Maintenance Cost	Increased Personnel, Overhead and Other Cost	Increased Utility Cost	Environmental Mitigation Cost	Total Cost	Time Savings by Vietnamese Business Passengers (International)	Time Savings by Vietnamese Business Passengers (Domestic)	Time Savings by Foreign Business Passengers (International)	Time Savings by Foreign Business Passengers (Domestic)	Increased Surplus to Vietnamese Tourist Pax (International)	Increased Surplus to Vietnamese Tourist Pax (Domestic)	Increased Receipts from Foreign Tourist Pax (International)	Increased Receipts from Foreign Tourist Pax (Domestic)	Benefits from Increased International Cargo			Benefits from Increased Domestic Cargo
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1995			0			0												
1996			0			0												
1997	1,426		0			1,426												-1,426
1998	13,278		0			13,278												-13,278
1999	22,644		0			22,644												-22,644
2000	5,474		0			5,474												-5,474
2001	15,345		0			15,345												-15,345
2002	75,008		0			75,008												-75,008
2003	111,777		0			111,777												-111,777
2004	132,588		0			132,588												-132,588
2005	62,631		0			62,631												-62,631
2006	375	5,255	157	433	233	6,452	3,819	1,334	2,815	506	5,246	1,444	2,298	185	4,545	1,092	23,284	
2007		5,255	333	433	233	6,254	8,091	2,723	6,054	979	11,165	3,090	4,843	376	9,729	2,307	49,337	
2008		5,255	531	433	233	6,452	13,052	4,181	9,748	1,422	17,757	4,970	7,661	587	15,551	3,629	78,540	
2009		5,255	753	433	233	6,674	18,644	5,719	13,943	1,850	25,425	7,096	10,850	803	22,226	5,075	111,610	
2010		5,255	1,066	433	233	6,987	24,926	7,326	18,656	2,189	33,899	9,501	14,336	1,029	29,967	6,690	148,500	
2011		5,255	1,334	433		7,022	30,986	8,855	23,312	2,529	41,702	11,765	17,476	1,214	37,281	8,135	185,255	
2012		5,255	1,627	433		7,315	37,812	10,508	28,558	2,859	50,311	14,244	20,896	1,401	45,376	9,704	221,668	
2013		5,255	1,949	433		7,638	45,321	12,266	34,441	3,185	59,997	16,969	24,646	1,589	54,536	11,380	264,332	
2014		5,255	2,055	433		7,743	46,414	12,197	35,820	3,034	60,669	17,213	24,935	1,546	54,536	11,380	267,744	
2015		5,255	2,164	433		7,852	47,427	12,128	37,170	2,877	61,476	17,475	25,232	1,500	54,536	11,380	271,201	
2016		5,255	2,273	433		7,961	47,866	12,156	37,921	2,864	61,476	17,475	25,232	1,500	54,536	11,380	272,427	
2017		5,255	2,386	433		8,074	48,324	12,184	38,703	2,891	61,476	17,475	25,232	1,500	54,536	11,380	273,702	
2018		5,255	2,508	433		8,196	48,801	12,212	39,516	2,898	61,476	17,475	25,232	1,500	54,536	11,380	275,028	
2019		5,255	2,633	433		8,321	49,299	12,240	40,363	2,905	61,476	17,475	25,232	1,500	54,536	11,380	276,407	
2020		5,255	2,766	433		8,455	49,818	12,268	41,244	2,911	61,476	17,475	25,232	1,500	54,536	11,380	277,841	
2021		5,255	2,904	433		8,592	50,434	12,335	42,332	2,940	61,476	17,475	25,232	1,500	54,536	11,380	279,641	
2022		5,255	3,050	433		8,738	51,081	12,403	43,475	2,968	61,476	17,475	25,232	1,500	54,536	11,380	281,528	
2023		5,255	3,203	433		8,891	51,760	12,472	44,675	2,997	61,476	17,475	25,232	1,500	54,536	11,380	283,505	
2024		5,255	3,365	433		9,053	52,473	12,542	45,935	3,027	61,476	17,475	25,232	1,500	54,536	11,380	285,577	
2025	-84,180	5,255	3,535	433		-74,957	53,222	12,612	47,268	3,056	61,476	17,475	25,232	1,500	54,536	11,380	287,749	

IRR 19.5%
NPV (at 12% discount rate) 185,956

16.3 FINANCING PLAN

The financial and economic analyses in the previous sections present a contradiction in that the Project will produce a high EIRR (19.5%), while its FIRR (3.1%) does not indicate commercial viability. The economic interpretation of the large difference between the EIRR and the FIRR is that the Project will produce not only direct economic benefits to airport users, but also external economies to non-users through the improved efficiency of enterprises, increased income from tourism, increased foreign and domestic trade, etc.

This is both a significant feature and a problem of infrastructure projects, since not all of external beneficiaries use the airport and pay airport charges, they, of course, do not necessarily pay airport charges. The conventional solution is the injection of public money. Alternatively, the Government may procure a soft loan from official development aid (ODA) sources.

Given the severe budgetary constraints being experienced by the Vietnamese Government, the financial analysis has suggested possible financing plans whose main component is a low-interest borrowing. One of those plans, established as the Base Case in Section 16.1.6, is as follows:

- State Subsidy:	15% of the total construction cost (for land acquisition and compensation, relocation and diversion of existing canals and roads, renovation of T1 terminal, turnover tax on construction works, etc.)
- Soft Loan:	85% of the total construction cost
- Interest Rate:	2.3% per annum
- Repayment Period:	20 years (after grace period)
- Grace Period:	10 years

It should be noted from the sensitivity analysis that more stringent borrowing conditions than the above will cause a significant deterioration in the financial position of the Project. Therefore, the above conditions should be regarded as a minimum requirement for financial feasibility. In addition, it is preferable that the percentage of state subsidy be increased as far as the budget allows in order to reduce financial risks involved in possible slowdowns in air traffic growth, unexpected rises in construction costs, etc.

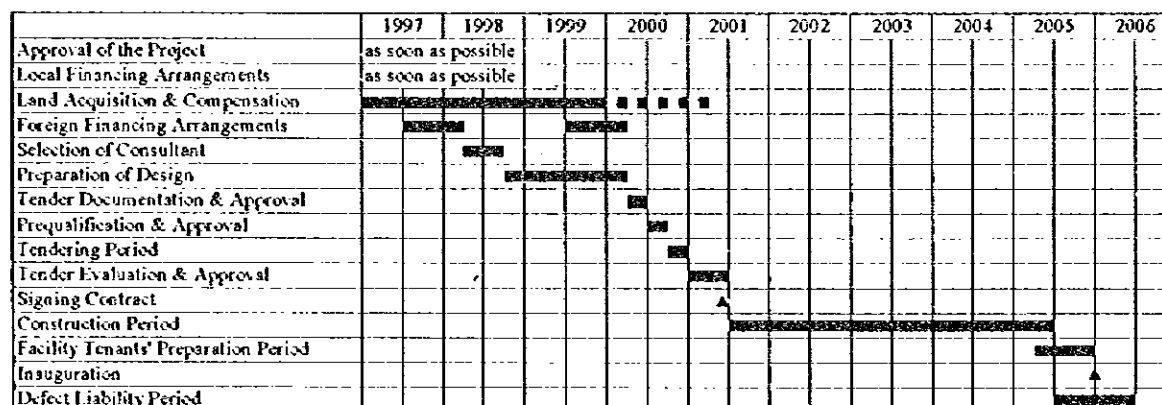
CHAPTER 17 PROJECT IMPLEMENTATION PLAN

CHAPTER 17 PROJECT IMPLEMENTATION PLAN

17.1 PROJECT IMPLEMENTATION SCHEDULE

Figure 17.1.1 shows a project implementation schedule, which would be applicable if the financial assistance from a foreign country is sought for both the design and construction phases of the Project.

Figure 17.1.1 Project Implementation Schedule



In order to allow sufficient time for land acquisition and compensation before financing arrangements for the construction, it is recommended to initiate the local financing arrangements as soon as possible.

17.2 EXECUTING AGENCY

The executing agency shall be responsible for the implementation of the Project, after Project approval by the Government. Consultants are usually employed for the design and construction phases of a project to assist the executing agency especially in the management and the technical fields. The executing agency shall give the information, guidance and approvals necessary for the services of the consultants, and monitor and control the quality, schedule and budget of the Project. It is also the responsibility of the executing agency to coordinate with the other organizations concerned, such as the State Planning Committee, Ministry of Finance, Ministry of Foreign Affairs, Ministry of Science, Technology and Environment, Hanoi People's Committee, and Soc Son People's Committee.

The executing agency of the Project will be the CAAV the same as for the T1 and other projects such as extension of taxiway and apron in the existing airport area.

CHAPTER 18 CONCLUSIONS AND RECOMMENDATIONS



THE UNIVERSITY OF CHICAGO LIBRARY



CHAPTER 18 CONCLUSIONS AND RECOMMENDATIONS

18.1 CONCLUSIONS

The Study was carried out for the new development of Hanoi International Airport in the southern area located next to the existing Hanoi International Airport. The target area of the Study was fixed only to the southern area by the both GOV and GOJ.

As a result of the comprehensive study of the southern area development presented in this report, including formulation of Long and Medium Term Development Plans and a feasibility study on the Medium Term Development Plan, it can be concluded that the new development of the southern area of Hanoi International Airport for the international services is a viable option to cope with anticipated traffic demand to the year 2010, and to ensure a reliable gateway to Hanoi and northern Vietnam.

The construction works for the Medium Term Development should commence in the year 2001 and be completed in 2005 when the demand is expected to exceed the capacity of the Airport.

18.2 RECOMMENDATIONS

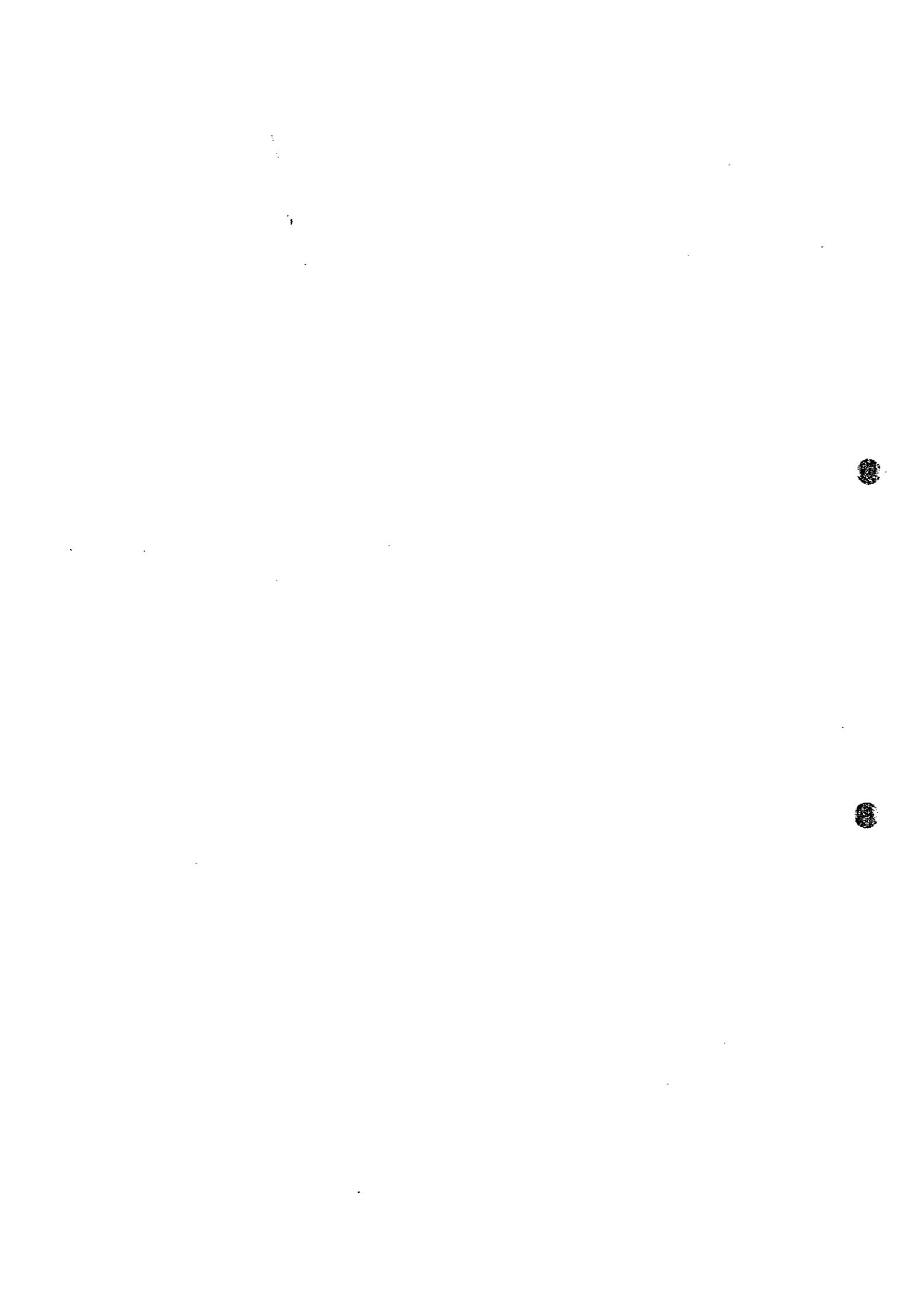
- a) Complete the current development projects (such as construction of new passenger terminal T1 and control tower, and extension of parallel taxiway and apron A1 in the existing airport area) as soon as possible in order to cope with the increasing traffic demand.
- b) Approve the Medium Term Development Plan by the Government of Vietnam, and designate the CAAV as the executing agency for the development.
- c) Provide sufficient project information, at appropriate times, to the organizations concerned, including the; State Planning Committee; Ministry of Science, Technology and Environment; Ministry of Defence; Ministry of Finance; and the Hanoi People's Committee.
- d) Initiate local financing arrangements as soon as possible to allow enough time for a peaceful resettlement of the residents.
- e) Prepare, as soon as possible, a detailed resettlement program including method of public hearing, planning of resettlement site, job training, time schedule, budgeting, etc.

- f) **Establish proper environmental protection and monitoring systems for the development.**

- g) **Implement the modernization and upgrading of air navigation systems, including replacement of the ILS, installation of a SALS and a PAPI for Runway 29, and installation of a ASR/SSR, before the year 2000 to improve the safety of operation and increase the capacity of the runway.**

- h) **Implement, as soon as possible, a comprehensive managerial and organizational restructuring at Hanoi International Airport to both improve levels of service and achieve financial self-sufficiency.**







JICA