7.6.4 Comparison of Annual Production

Tables 7.6.12 and **7.6.13** present production volume in 1996 and major production indices of world airlines.

Average seat in column B (=ASK/Flight Kilometer) shows a tendency toward an increase in served aircraft of the airline. Average Block Time/Flight in column C (=Block Time/Aircraft Departure) gives average flight hours per flight of the airline.

Average Kilometer/Flight in column D (=Flight Kilometer/Aircraft Departure) represents the average route length of the airline.

Average speed in column E is calculated by Flight Kilometer/Block Time, and gives the efficiency of served aircraft of the airline.

ASK/Block Time in column F means the production volume (seat-kilometer) per hour, and represents probable production capacity of the airline.

Based on the above indices, schematic comparison of production indices of major airlines in the world is shown in **Figs. 7.6.1** and **7.6.2**.

ASK/Block Time of Uzbeksitan in terms of All Flights is low level as same as that of airlines in the former USSR countries, showing 92, while ASK/Block Time in terms of International Flights is 148.

As far as international flights of Uzbeksitan Airways are concerned, probable production capacity of Uzbekistan Airways is not inferior to that of other major airlines in the world. This means that if International Services of Uzbeksitan Airways is operated separately as an independent company, this company would have a competitive capacity in terms of size and efficiency of aircraft among the airlines in the world.

7.6.5 Productivity of Uzbeksitan Airways

In order to maintain a high flight frequency and block time, heavy production loads must be imposed upon operations, crew and maintenance divisions.

In general, old Russian-made aircraft presently owned by Uzbekistan Airways are bound to inflict huge operating expenditure to the company, compared with western-made aircraft.

The route structure and productivity analysis of the Uzbekistan Airways also would be possible if financial and other essential data were available. In air route structure planning of self-supporting airlines, it is most important to analyze their productivity on a monetary basis.

In this regard, development of a compiling system for air transport statistics and financial data is indispensable, adopting the manner commonly used by western airlines, IATA and ICAO.

Major elements for analysis of productivity in western airlines are as follows:

- Sales amount (in US$) by route, Revenue per passenger
- Number of passenger aircraft
- Number of total employee and revenue per employee
- Revenue passenger kilometer (RPK), available seat-kilometer (ASK)
- Number of passenger carried, ASK per employee
- Passenger load factor (RPK/ASK)

Table 7.6.12 Production Volume and Indices of Airlines in th World (All Scheduled Flights: 1996)

Names of Airlines	Flight kilo ($\times 10^3$)	Aircraft Departure	Block Time (Hrs)	ASK ($\times 10^6$)	(A) Pax. Load Factor (%)	(B) Ave. Seat	(C) Ave. B.T./FLT	(D) Ave. Kilo/FLT	(E) Ave. Speed	(F) ASK/B.T. ($\times 10^3$)
Uzbekistan Airways	46,885	33,176	80,083	7,329	?	156	2.41	1,413	585	92
American	1,472,775	787,415	2,339,966	245,662	68.5	167	2.97	1,870	629	105
United	1,347,179	785,158	2,069,804	261,755	71.7	194	2.64	1,716	651	126
Delta	1,187,047	924,988	2,000,116	215,023	70.3	181	2.16	1,283	593	108
Northwest	812,492	585,924	1,354,798	151,135	73.1	186	2.31	1,387	600	112
British Airways	529,057	306,665	833,517	137,542	73.1	260	2.72	1,725	635	165
Lufthansa	537,755	470,142	933,085	91,998	68.8	171	1.98	1,144	576	99
Air France	380,641	197,290	581,235	75,800	75.8	199	2.95	1,929	655	130
Alitalia	272,855	260,872	498,669	50,137	68.9	184	1.91	1,046	547	101
Thai Airways	140,274	91,728	216,147	42,683	69.8	304	2.36	1,529	649	197
Singapore	246,324	69,661	318,367	72,378	74.4	294	4.57	3,536	774	227
Garuda	124,634	71,653	158,438	32,475	54.9	261	2.21	1,739	787	205
Air India	63,794	22,736	92,177	17,833	64.7	280	4.05	2,806	692	193
Pakistan	73,818	69,973	136,749	16,543	64.0	224	1.95	1,055	540	121
Turkish	100,922	84,932	189,698	16,297	67.2	161	2.23	1,188	532	86
Etial Israel	67,310	22,912	96,319	15,998	72.0	238	4.20	2,938	699	166
Orinpic	65,847	92,357	135,157	13,049	65.4	198	1.46	713	487	97
Cathey Pacific	181,295	54,810	243,076	54,252	74.0	299	4.43	3,308	746	223
Quantas	270,389	136,021	405,066	77,241	72.0	286	2.98	1,988	668	191
Korean Airlines	216,439	146,741	360,331	52,982	71.2	245	2.46	1,475	601	147
Japan Airlines	328,144	140,242	468,619	108,503	69.9	331	3.34	2,340	700	232
All Nippon Airways	226,848	199,444	360,506	72,351	65.0	319	1.81	1,137	629	201
Japan Air System	90,685	139,234	187,313	20,088	60.7	222	1.35	651	484	107
Aeroflot	142,364	46,502	180,458	22,389	59.4	157	3.88	3,061	789	124
Transaero	28,648	12,342	39,601	4,750	61.6	166	3.21	2,321	723	120
Air Ukraine	28,584	18,500	42,568	2,046	55.0	72	2.30	1,545	671	48
Estonian	3,559	5,646	6,399	334	36.4	94	1.13	630	556	52
Lithuanian	6,100	4,453	10,410	641	43.2	105	2.34	1,370	586	62
Armenian	8,570	2,207	11,135	1,141	65.4	133	5.05	3,883	770	102

Notes: (B) = ASK/Flight Kilo(FLT KILO) (C) = Block Time(B.T.)/Departure (D) = FLT KILO/Departure (E) = FLT KILO/B.T.

Resources: World Air Transport Statistics WATS 6/67 No.41 IATA

Table 7.6.13 Production Volume and Indices of Airlines in th World (International Scheduled Flights : 1996)

Names of Airlines	Flight Kilo ($\times 10^3$)	Aircraft Departure	Block Time (Hrs)	ASK ($\times 10^6$)	(A) Pax. Load Factor (%)	(B) Ave. Seat	(C) Ave B.T./FLT	(D) Ave. Kilo/FLT	(E) Ave Speed	(F) ASK/B.T. ($\times 10^3$)
Uzbekistan Airways	19,907	3,952	25,904	3,845	?	193	6.55	5,037	768	148
American	406,541	143,534	587,139	78,599	69.8	193	4.09	2,832	692	134
United	336,617	67,216	432,996	98,902	73.4	294	6.44	5,008	777	228
Delta	226,036	64,014	305,699	49,264	73.0	218	4.78	3,531	739	161
Northwest	219,050	57,812	293,576	64,308	78.3	294	5.08	3,789	746	219
British Airways	484,285	218,876	724,514	129,760	73.2	268	3.31	2,213	668	179
Lufthansa	466,774	286,913	747,746	83,264	69.8	178	2.61	1,627	624	111
Air France	375,860	188,950	570,254	75,103	75.8	200	3.02	1,989	659	132
Alitalia	206,607	122,437	335,266	40,107	69.9	194	2.74	1,687	616	120
Thai Airways	118,288	45,944	168,568	37,773	70.2	319	3.67	2,575	702	224
Singapore	246,324	69,661	318,367	72,378	74.4	294	4.57	3,536	774	227
Garuda	66,028	26,292	94,861	26,387	54.5	307	3.61	3,272	907	278
Air India	56,906	16,143	79,784	16,077	68.1	283	4.94	3,525	713	202
Pakistan	51,960	21,859	77,682	13,492	63.5	260	3.55	2,377	669	174
Turkish	73,978	34,812	121,169	12,579	65.2	170	3.48	2,125	611	104
Etiaf Israel	67,310	22,912	96,319	15,998	72.0	238	4.20	2,938	699	166
Orinpic	49,576	31,217	81,717	11,495	64.6	232	2.62	1,588	607	141
Cathey Pacific	181,295	54,810	243,076	54,252	74.0	299	4.43	3,308	746	223
Quantas	172,467	31,289	218,962	58,499	71.5	339	7.00	5,512	788	267
Korean Airlines	186,354	52,228	266,283	46,414	70.1	249	5.10	3,568	700	174
Japan Airlines	260,620	53,565	336,854	82,517	73.1	317	6.29	4,865	774	245
All Nippon Airways	70,055	12,657	93,419	22,198	68.7	317	7.38	5,535	750	233
Japan Air System	1,682	1,054	2,889	435	72.3	259	2.74	1,596	582	151
Aeroflot	137,653	45,058	174,659	21,781	59.8	158	3.88	3,055	788	125
Transaero	13,021	7,121	18,518	2,071	54.3	159	2.60	1,829	703	112
Air Ukraine	17,816	6,663	19,284	1,370	57.7	77	2.89	2,674	924	71
Estonian	3,559	5,646	6,399	334	36.4	94	1.13	630	556	52
Lithuanian	6,100	4,453	10,410	641	43.2	105	2.34	1,370	586	62
Armenian	8,570	2,207	11,135	1,141	65.4	133	5.05	3,883	770	102

Notes: (B) = ASK/Flight Kilo(FLT KILO) (C) = Block Time(B.T.)/Departure (D) = FLT KILO/Departure (E) = FLT KILO/B.T.

Resources: World Air Transport Statistics WATS 6/67 No.41 IATA

Fig. 7.6.1 **Comparison of Production Volume of Airlines in the World**

-All Scheduled Flights: 1996 -

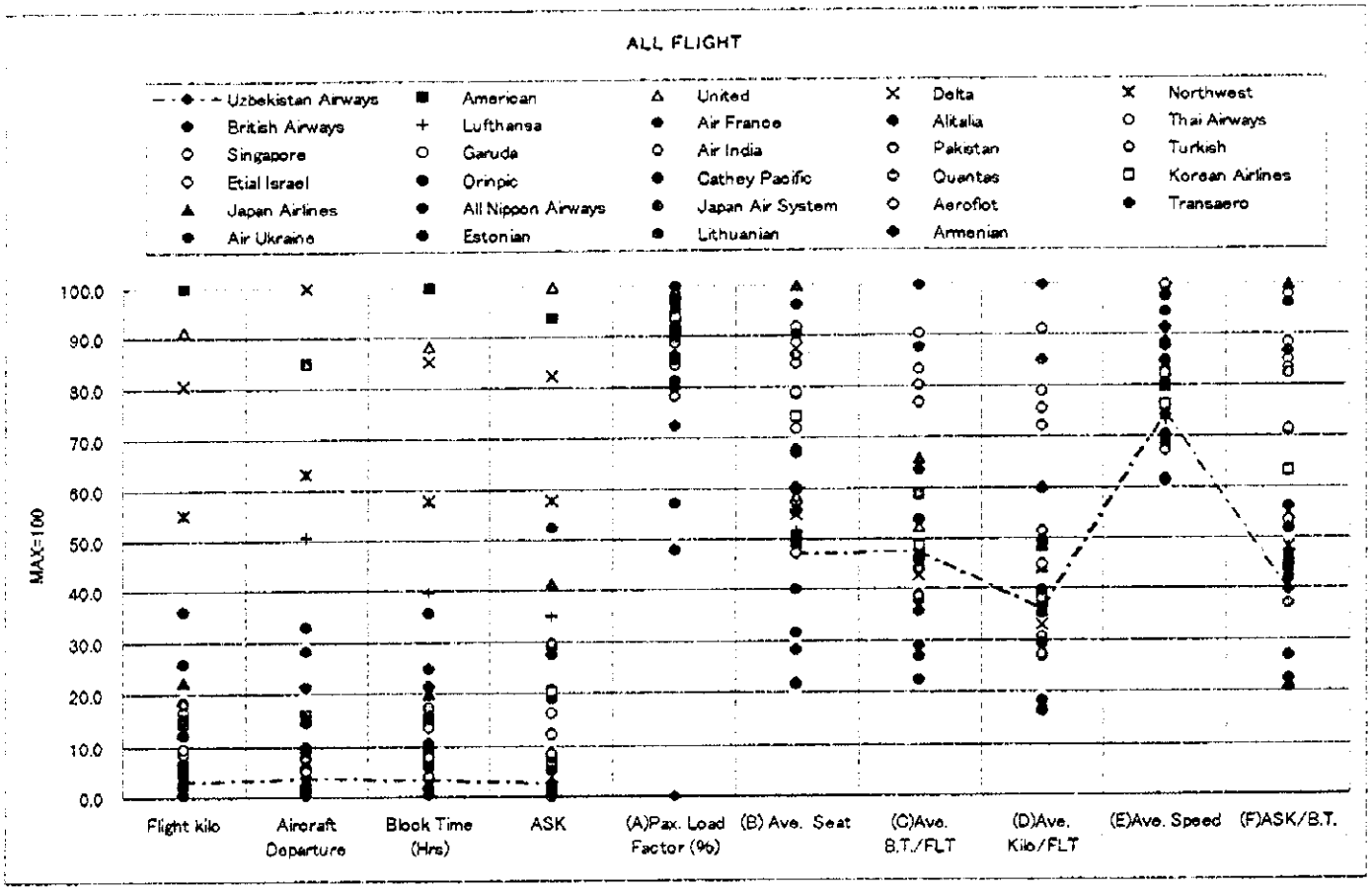
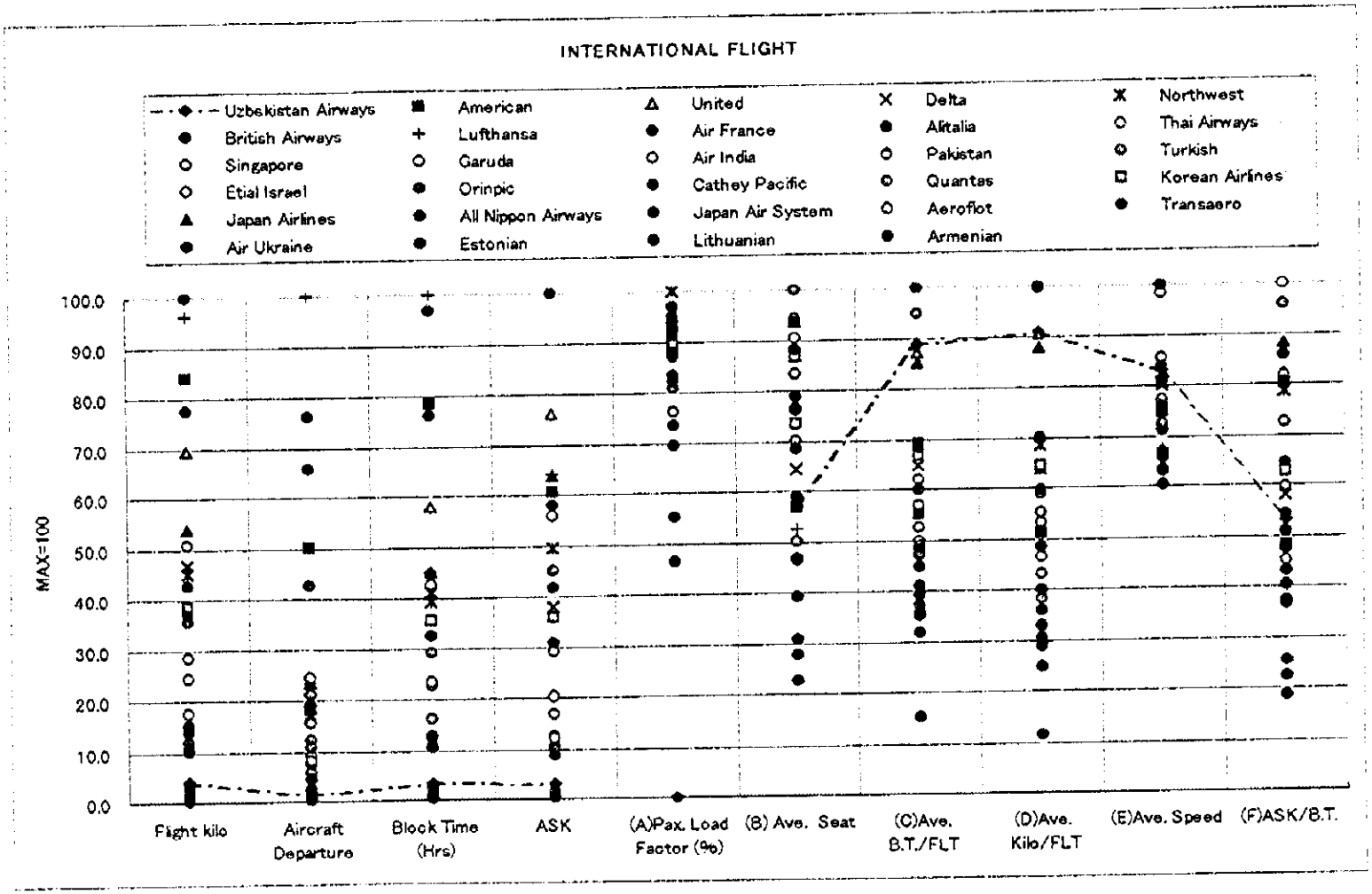


Fig. 7.6.2 **Comparison of Production Volume of Airlines in the World**

-International Scheduled Flights : 1996-



7.6.6 Current Process for Business Management of Uzbekistan Airways

As aforementioned, information related to operation planning and its management procedure as an airline business were not available during the Field Survey. Without proper data and discussions with NAC headquarters, conjecture is needed to analyze the management process of Uzbekistan Airways.

The following descriptions and diagram shown in **Fig.7.6.3** are prepared as material for discussion with NAC to facilitate a further understanding and analysis.

(1) Economic Management Division and Financial Management Division are the key divisions in the NAC organization to set-up corporate planning, consisting of the basic economic plan, routes and frequencies plan, revenues and expenditures plan, financial/fund planning and budgeting.

(2) The Economic Division is likely to be in charge of some perspective affairs, including demands forecasting, and fuel planning, while the Financial Division seems to handle the figures derived from actual achievements.

(3) Before making the routes and frequencies plan and annual budgets, coordination with the productive divisions, administrative divisions, and some of the large subsidiary companies, such as TAE, Uzaeronavigation is made.

(4) When routes and frequencies are planned and annual budgets finalized, this task would be transferred under orders to production divisions, and other administrative divisions of the head office and sales divisions.

(5) The Timetable is prepared with the coordination of the Management of Traffic Organization and Sales and Reservation sections. The Timetable is distributed to all organizations inside NAC, and to outside markets for sales promotions.

(6) Daily operations are performed around Tashkent airport and many other airports.

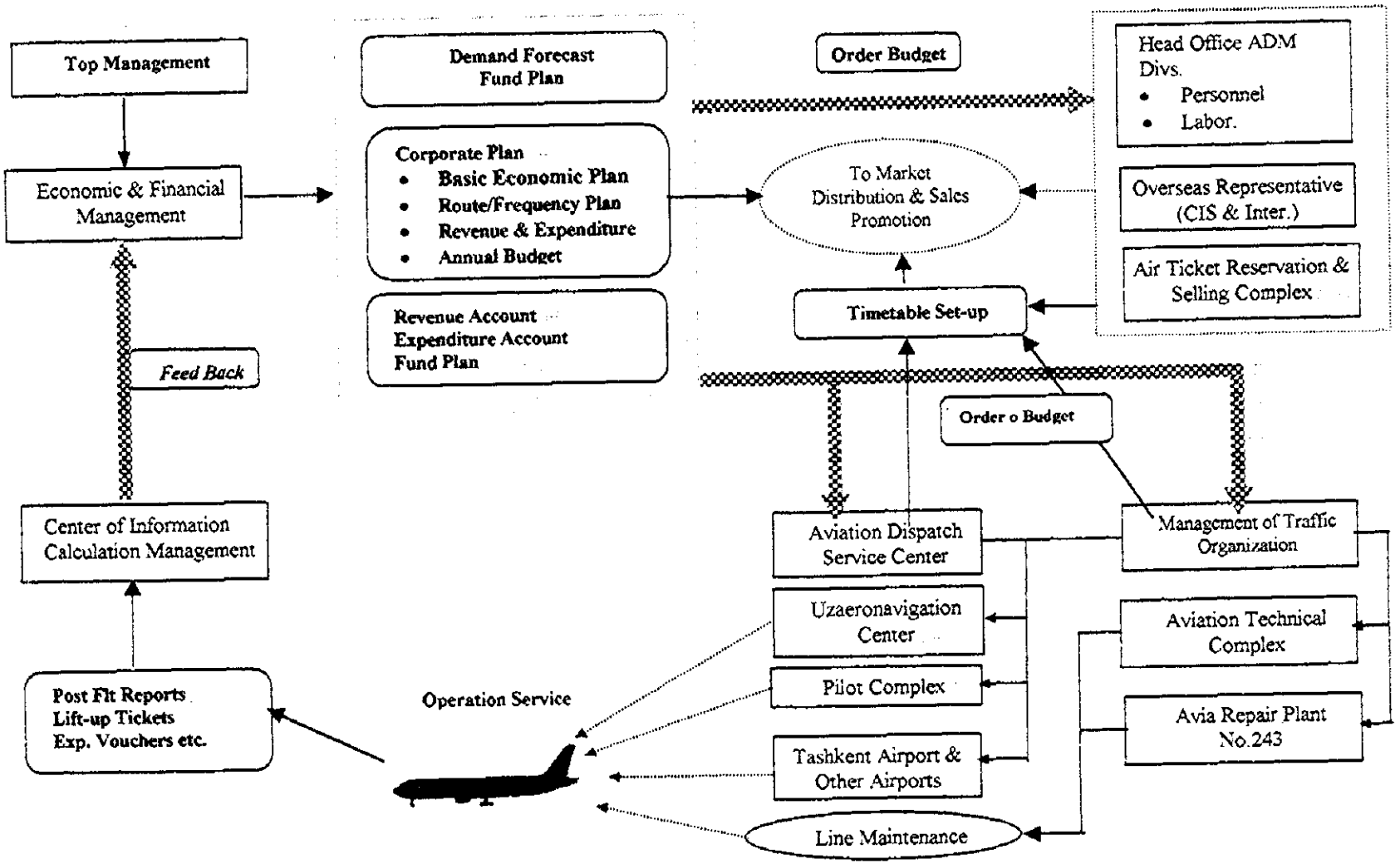
(7) The line fleet is technically well supported by crew, navigators and line maintenance mechanics with strong back-up from the "Aviation Technical Complex".

(8) After daily flight operations, all collected tickets, expenditure vouchers and necessary post-flight information, are sent immediately to the head office.

(9) Center of Information, Calculation Management collects all the documents and information from field activities. This section has the very important function of collecting data, analyzing and summarizing.

NAC supply various managerial related information to the economic and financial divisions. The feed-back of data and information are used for budget control and for making profit-loss and balance sheets at the end of each year, together with planning for the next period.

Fig. 7.6.3 Presumed Diagram of Current Business Process of UZ Airways



7.6.7 Corporate Planning

Economic Management unit of NAC head office normally prepares the corporate plans of Uzbekistan Airways. Judging from limited information and explanations from NAC side, its method seems to differ greatly in various aspects from the western one,

According to future operation plan (*) of Uzbekistan Airways up to 2010 currently prepared by NAC, firstly the Economic Management unit might prepare a plan, and set figures of the following items, taking into consideration the activities achieved in the past.

- F flight frequency
- Aircraft flight kilometer
- Load factor
- Passenger growth ratio
- RPK (revenue passenger-kilometer)
- Cargo tons
- Cargo growth ratio
- RTK (revenue ton-kilometer)

  * Prognosis data in total on development of air transportation up to 2010 by Uzbekistan Airways

  * Prognosis of development of main industrial and financial indices of Uzbekistan Airways up to 2010.

  * Analysis of expenditure and revenue prognosis up to 2010.

Secondly, based on forecast of RTK, annual total revenue is calculated by multiplying unit revenue per RTK (Ton-kilometer Yield). From the annual total revenue, total expenditure and gross income are determined out by multiplying some constant ratio, 0.858 and 0.142 respectively.

Annual total revenue is then divided into several sub-revenue items as passenger revenue, cargo revenue, special and charter revenue etc.

Annual total expenditure also is divided into sub expenditure items such as flight charge, fuel, crew wages and other items.

From the gross income, two kinds of tax are then subtracted. One is the value-added tax, at a rate of 23% on profit, and the other is income tax, 38% on profit after subtracting the value-added tax.

All of these figures seem to be "Planned Figures" under the planing-oriented economic system, which has been very popular among CIS countries. Once these plans would be achieved, a constant profit of 14.2% on revenue and due taxes could be guaranteed firmly.

These planned figures are determined without analysis on some definite route and frequency plan, but are based on some theoretical logic using forecast demands volume and some relative co-efficient as shown below:

- Average passenger travel distance: approx. 2000km
- Average revenue per revenue ton-kilo: approx. 11.3 sum/RTK.

- Fixed ratio of total expenditure against revenue
- Fixed ratio of revenue sub items against total revenue
- Fixed ratio of two types of tax against profit: value-added tax -- 23 % of profit
  income tax – 38 % of profit

Thirdly, the Economic Management unit might proceed to build up annual route and frequency planning with the help of the sales and traffic units. Sales and traffic units, then, arrange the plan for seasonal timetable.

Operations, crew, maintenance and other productive divisions concerned would check the feasibility and availability of the plan from a point of view of their respective resources.

Uzbekistan Airways has presumably two steps for making corporate plans.

- **First Step** To set up a basic economic plan (for long range)
- **Second Step** To build up annual route and frequency plan to meet the given figures under the basic economic plan.

On the other hand, corporate planning divisions in some of the western airlines build up their route and frequency plan first, based on the "past-achieved" figures and demand forecast for the near future.

Even in case of making up a medium range planning, they would make a framework of route and frequency by aircraft type.

The corporate planning division would figure out basic productive amounts as number of flight, aircraft block time, ASK (available seat kilo), ATK (available ton kilo) and others by each aircraft type.

It also estimates roughly the revenues and expenditures and prospective operating profit, leading to a total financial plan with a trial profit and loss and a balance sheet.

The basic route and frequency plan must be delivered to all of the company's divisions concerned with a trial timetable.

With the basic plan on hand, productive divisions check the feasibility and availability reflecting their resources while the passenger and cargo sales divisions would calculate feasible revenues by their own detailed methods.

All divisions of the company would request their respective expenditure budgets needed to execute the plan to the corporate planning division.

The corporate planning division would collect the budget requests and negotiate with each division for budget allocation and trim them as appropriate finalize the annual corporate plan for a good balanced.

Once annual route and frequency plan and budget allocation have been decided, all planned productive figures are formally set up and revenue and expenditure budgets are delivered to respective divisions as orders.

Sales division would finally fix the detailed timetable.

Note Usually the timetable has already been published for marketing in advance (more than one year prior to actual scheduled date) on a planned or trial base for sales activity.

An annual corporate plan might typically contain the following items.

- Route and frequency plan by aircraft type
- Revenue and expenditure budgets
- Profit and loss and other financial plans

Under the above main plans, various sub plans as below are contained.

- Sales plan
- Fleet plan
- Crew plan (cockpit and cabin)
- Maintenance plan (engines and parts)
- Personnel plan
- Facility arid ground equipment plan, etc.

Generally, western airlines usually have two types of corporate planning: a long- or medium-term plan and annual plan.

A long- or medium-term plan would prospect future situations surrounding the company and find out future directions in which to go and suggest the necessary preparations (for new aircraft, ground facility with fund plan and crew training etc). The annual plan is supposed to materialize in the first year of the long or medium plan in reality.

The products of an airlines are enable to be individual route service, and the corporate planning division is expected to combine them to the most effective package, given the limited resources of the company.

Each route has its own demand and price and cost as a commodity. It is commonly understood in western airlines that corporate planning of an airline must start with setting up route and frequency plans, and calculate products volume, revenue and expenditure through elaborate accumulation, not by some logical methods as adopted in planned economics commonly used in CIS countries.

To sum them up, a brief comparison for corporate planning is shown below.

Uzbekistan Airways	**Some Western Airlines**
Step 1:	**Step 1:**
Basic economic plan including revenues, expenditures, profit, budget, taxes and total product volume are calculated based on the theoretical ratio.	Route and frequency plan is prepared. Company's product volume is obtained by accumulating product volume of each route
Step 2:	**Step 2:**
Route and frequency plan to meet the above basic economic plan is prepared.	Revenues, expenditures, profits and budgets are calculated based on the route and frequency plan.
Step 3:	**Step 3:**
Timetables are prepared.	Timetables are prepared

7.6.8 Sales and Reservation

In the era of the former Soviet Union, all planning and management of air transport was made and controlled exclusively by Aeroflot, which had a huge air route networks and a well developed computer system.

Without sales and reservation agents, salesmen, sales promotional activities and advertising, handling volume of air passengers at Tashkent airport reached a considerable level. It peaked in around 1990, just before the collapse of the Soviet Union, and its volume was several times the present one. There was no need for sales activities.

During the field survey, it was not easy to obtain a published timetable of Uzbekistan Airways. Without a published timetable, how can reservations and sales promotion be made? Previously, a traveler merely would try to telephone Aeroflot for reservations and get the necessary information. It might have been quite possible without a published timetable, because Aeroflot was a monopolized airline at that time.

Nowadays, Uzbekistan Airways is going to take an active part in the free open market in air transport worldwide. Therefore, it is most essential for Uzbekistan Airways to establish a distribution system with proper timetables on time, especially in the international market. It is also necessary for the airline to strengthen its market study and sales promotion capability by establishing effective sales channels.

As a matter of fact, the sales division of Uzbekistan Airways has just begun a big move toward adjusting to the market-oriented situations through the following effective actions:

- To improve its computer reservation system
- To strengthen its sales network by increasing sales agents
- To publish printed time-tables on time and distribute them widely
- To publish its first advertising pamphlet, etc.

7.6.9 Passenger/Baggage Handling at Tashkent Airport

As stated above, passenger, baggage, cargo and mails are totally handled by personnel of Tashkent Airport Enterprise (TAE), which also performs ramp services (handling aircraft), except line maintenance. This is the biggest difference from other western airlines.

Since these handling jobs have been performed by airport staff for many years in Uzbekistan or, may be, in other CIS countries, the personnel must have become quite accustomed to the system. But its merits are questionable, especially in the field of passenger and baggage handling.

Transporting passengers and checked baggage to the destinations without fail is an essential duty and responsibility of airlines. All passengers are usually very much concerned about their checked baggage being transported safely to their destinations.

Airport staff, of course, is very eager not to make any mistakes with checked baggage handling, but their main jobs are loading them to the assigned aircraft. In this job they are therefore less concerned with the arrival of the baggage items at the destination.

Once trouble has occurred, trouble-shooting must be done between staff at a remote overseas station and staff of TAE, exchanging information. Overseas staff is trained differently from TAE's staff. They belong to different enterprises with different command lines. Baggage

trouble-shooting requires professional staff with skill and knowledge.

Furthermore, nowadays the all-through check-in of baggage is considered a necessary service for connecting flights. Passengers, especially high-yield business passengers are very concerned about their through-checked-in baggage, hoping for secure and smooth handling by the airlines concerned.

Once an airline is rumored to have a problem with baggage handling on its international lines, some of the passengers would bring their big baggages into the cabin and the atmosphere within the cabin would deteriorate.

It might be very difficult to change the organization of TAE by partially introducing trained staff into the passenger handling line. What is more, handling charges are one of the most important revenue sources for TAE. Some counter measures, however, seem to be necessary to minimize baggage trouble.

As a result, passenger and baggage handling, at least, should better be performed by Uzbekistan Airways staff, not by airport people.

7.6.10 Aircraft Operation

(1) Fleet of NAC

The fleet of NAC comprises aircraft manufactured by western manufacturers, aircraft manufactured by former Soviet Union's manufacturers and helicopters as shown in **Table 7.6.14**.

Yak-40's and AN-24's are mainly put into domestic services, Tu-154's are in service inside of the CIS and IL-62's, A-310's and B767's are used on international services.

As is shown in **Table 7.6.14**, their fleet contains very old aircraft aged more than twenty (20) years such as Yak-40, AN-24 and AN-2, which are being replaced with the newly introduced RJ-85 model. Already two (2) of RJ-85's were delivered in July and in September 1997. In addition to the above two RJ-85s, the third airplane is to be delivered in early 1998. Among these one is appointed for VIP use.

Table 7.6.14 Number of NAC's Aircraft

Model or Type of Aircraft	Number	Average Age
A-310-300	2	6 years
B-767-300	2	6 months
B-757-200	1	7 months
RJ-85	1	New
IL-86	10	12 years
IL-76	15	6 years
IL-62(M)	9	15 years
Tu-154(M)	24	13 years
Yak-40	21	20 years
AN-24	24	25 years
AN-2	182	25 years
IL-114	2	3 years
MI-8(MTV) *	24	15 years
MI-2 *	15	12 years
KA-26 *	34	20 years
Total	**366**	

Source: NAC, * : Helicopter

(2) Operation Planning

Detail procedure applied to operation planning for scheduled flights was not made available to the study team during the field survey conducted. A review, however, based upon limited information given by NAC concludes as follows:

a) Remarkable difference in Daily Utilization(Flight hours per day) and Average Flight hours per year

Daily utilization of Russian-made aircraft such as IL-62 and IL-86 is estimated as seven(7) hours, while for Western-made aircraft, such as A-310 and B-767, this is fourteen(14) hours.

Average Flight hours per year by Russian-made aircraft is approximately between seven hundred (700) and eight hundred (800) hours, while that by Western-made aircraft is approximately four thousand five hundred (4,500) hours. **Table 7.6.15** shows annual average flight hours by type of models.

Table 7.6.15 Annual Average Flight Hours

Aircraft Model	Average Flight Hours per a Year
IL-62	778
IL-76	737
IL86	418
A310	4,481
Tu-154	569
Yak-40	806

Source: NAC

b) Remarkable imbalance between number of crew and number of airplane of the model is gradually corrected.

Table 7.6.16 shows number of cockpit and cabin crew as of December 1997.

Table 7.6.16 Number of Flight and Cabin Crew in NAC

Aircraft	Number of Fleet	Captain	Copilot	Flight Engineer	Navigator	Cabin Attendant	Total
A310-300	2	15	25	0	1	41	82
767-300	2	1	22	0	1	156	180
757-200	1	7	4	0	1	26	38
RJ-85	1	0	0	0	0	0	0
IL-86	10	25	19	29	20	316	409
IL-76	15	31	26	23	26	0	106
IL-62(M)	9	19	29	24	17	0	89
Tu-154(M)	24	59	56	67	48	106	336
Yak-40	21	91	74	66	2	31	264
An-24	24	49	59	57	19	26	210
An-2	182	107	56	0	0	0	163
IL-114	2	14	7	0	0	0	21
MI-8(MTV)	24	29	22	25	2	0	78
MI-2	15	15	0	4	0	0	19
KA-26	34	13	0	3	0	0	16
An-12	0	4	8	4	5	0	21
Total	366	479	407	302	142	702	2032

Source: NAC

c) Policy for crew duty allocation is gradually improved so that operating cost can be minimized by decreasing duration of stay in foreign countries such as in Holland where basically one night stay is applied to crew off/on-duty crew.

(3) Approval for Flight Crew License

Current qualification requirement for cockpit crew was prepared by Uzbekistan Airways, and reviewed and consented by Lufthansa. Crew license for western-made model such as A-310 and B767 is granted by the Uzbekistan authorities. However, about 30% of licensed crew have been examined and passed by Lufthansa (A-310), and by Boeing (B767) before they were approved.

(4) Crew Training(Emergency Evacuation)

Emergency evacuation training is performed every six (6) months. Participants are both cockpit and cabin crew.

(5) Audit by Foreign Authorities

Before start of service to New York, they reviewed and followed comments and recommendations by FAA after inspection both in operation and maintenance of Uzbekistan Airways.

(6) Preparation for Departure

Preparation, check and confirmation procedures are conducted in the same manner as those of western airline. The flight plan is prepared and signed by the flight crew and dispatcher. In accordance with the flight plan, "Loading and Distribution Chart" is then prepared for loading services of fuel and cargo with confirmation by a section at the origin airport. After completion of these activities, the flight crew checks and confirms the status of the airplane prior to departure.

(7) Cabin Services

Cabin services currently being provided on flights of Uzbekistan Airways seems to be equal or better than those in western airlines and training programs for western designed aircraft are already well established.

Outline of current training program for cabin attendants is as follows;

• Number of Instructors	10 Instructors
• Training Duration	14 days for A310 7 days for B767 12 days for RJ-85
• Initial Training for Cabin Attendant	3.5 months
• English Training(primary)	5 months
• Uzbeki-language(primary)	14 days
• English Training(advanced)	21 days

After graduation from the above training course, the following ground courses are conducted by the department of operation safety administration;

• Technical Training	every month

- Inspection of Preparation for Flight — every flight
- Brush-up training — before return to duty after long term duty off
- Special training — only for poor skilled attendant

(8) Evaluation of Present Operation Plan

Evaluation based on the current fleet size and timetable suggests that operation planning which involves flight route, assignment of airplane and crew, have room for improvement when western analysis methods are adopted.

Table 7.6.17 and **7.6.18** show the required number of airplanes and crew as the result of evaluation based on the current timetable, which excludes special flights such as charter flights, and crew duty hours/pattern, maintenance requirement as well.

In addition to the above, the following has been pointed out;

a) There are more eastern-made aircraft than required.

b) Crew training is making progress step by step and balance between number of airplane of the model and number of crew (captain, co-pilot, flight engineer, and navigator) is improving. Meanwhile the imbalance between the number of airplanes of the individual models, and number of crew will gradually be resolved.

c) Number of cabin crew for A-310 is probably less than required.

Table 7.6.17 Fleet Required for Scheduled Flight

Aircraft Model	Present Number of Aircraft	Number of Airplanes	Remarks
B767	2	3	Replacement required during "C-Check"
A-310	2	3	
IL-62	9	8	One is for "Replacement"
Tu-154	24	7	
An-24	24	9	
Yak-40	21	16	

Table 7.6.18 Required for Flight and Cabin Crew

Aircraft Model	Flight Crew			Cabin Crew	
	Present Pilot	Present Copilot	Required	Present (*)	Required (set)
B767	1	22	16	156	16
A-310	15	25	11	41	11
IL-62	19	29	18	-	-
Tu-154	29	56	31	106	31
An-24	59	59	10	26	10
Yak-40	91	74	18	31	18
Total	**214**	**265**	**104**	**163**	**59**

Note: Present (*) indicates the number of present cabin crew.

(9) Evaluation on number of employee

Current number of employee is fairly reasonable when evaluation is made on the basis of the number of airplane owned by NAC. However, this comes out to be under larger when analyzed on the basis of number of scheduled flights served. This means that production efficiency is much lower than that in western airlines.

7.6.11 Aircraft Maintenance

(1) Applicable Regulations for Maintenance

Current applicable regulations for aircraft maintenance in NAC are based on MAK (Regulations approved by Interstate Aviation Committee of CIS) for Russian model aircraft and FAR(Federal Aviation Regulations established by Federal Aviation Agency of USA) for Boeing 767 and 757, and JAR(Joint Aviation Regulations established by civil aviation authority organization in EU countries) for A310.

Maintenance of NAC's eastern built fleet aircraft is mainly carried out by two (2) parties, namely, Aviation Technical Complex (ATK) under the NAC organization and state company, Avia Repairing Plant No.243 situated at Tashkent Airport.

(2) Aviation Technical Complex (ATK)

ATK is one of NAC's complexes with 600 engineers and mechanics, 50 inspectors for quality control and 650 other staff in Tashkent airport and 500 staff in total at local airports.

ATK has been planning to send about two hundreds (200) mechanics for training to Boeing, Lufthansa and Avro. ATK is now applying for "Repair Station Certificate" of JAA.

(3) Repair Plant No.243

Repair Plant No.243 was established in 1924, and is scheduled to become a stock company in order to form a technical maintenance center in Central Asia with a view to receiving orders for maintenance of western-designed aircraft such as B757, B767 and A310 from countries in the CIS such as Turkmenistan, Azerbaijan, the Ukraine and Russia. Currently, this plant provides maintenance services for Russian, Ukrainian, Kazakhstan and Turkmenistan airlines.

The total number of employees is about 2,500 and its production capability is estimated at a level so that three(3) IL-62 can be repaired in a month. The plant performs maintenance (modification, repair, painting, overhaul and other maintenance work) on IL-62, IL-76, IL-86 and Engine/APU manufactured in Russia. It also applies for the JAA Certificate for the Repair Station.

(4) Qualification Requirement for Mechanics

Aircraft maintenance mechanics working at ATK or Repair Plant No.243 require the following qualifications:

- Training on model of aircraft and practical training in the Training Center and Factory.
- License for Technical Service is limited to three (3) models of aircraft.
- Permission to sign documents is given to aviation mechanics with a degree not lower than 4.
- Permission to approve work in Technical Maintenance is granted to aviation technicians before the approval of the technician.
- The license is given to personnel not younger than 18 years and not older than 55 years.

On the other hand, Engineers, Mechanics and Technicians are classified according to their required qualification as shown below;

- **Mechanics**

Airframe and Engine	2,3,4 degree (class I, II, III)
Instrument and Electrical Equipment	2,3,4 degree (class I, II, III)
Radio equipment	4 degree (class I)

- **Technicians**

Airframe and Engine	4,5,6 degree (class I, II, III)
Instrument and Electrical Equipment	4,5,6 degree (class I, II, III)
Radio equipment	4,5,6 degree (class I, II, III)

- **Engineers**

Airframe and Engine	Un-categorized, Cat. I, Cat. II, Leading Cat.
Radio-electronics equipment	same as above

Table 7.6.19 Number of Licensed Engineer

Specialist	Leading	Category I	Category II	Un-categorized
Aircraft engine operation engineer	21	28	51	41
Aircraft radio equipment engineer	10	16	14	11
Avia-instrument and electrical equipment engineer	10	23	25	16
Total	**41**	**67**	**90**	**68**

Table 7.6.20 Number of Technicians

Specialist	Class I, 6 degree	Class II, 5 degree	Class III, 4 degree
Aircraft engine operation avia-technician	82	155	214
Aircraft instrument and electrical equipment avia-technician	44	83	72
Aircraft radio equipment avia-technician	25	38	40
Total	**151**	**276**	**326**

Table 7.6.21 Number of Licensed Mechanics and Technicians by Type of Aircraft

Model	Mechanic	Technician	Total
IL-62	33	17	50
IL-76	34	18	52
IL-86	18	10	28
Total	**85**	**45**	**130**

Source: NAC

(5) Current Procedures of Aircraft Maintenance

Maintenance requirement of major aircraft in NAC is specified as follows;

- IL-76 and IL-62

First Maintenance	200 hours

Second Maintenance	600 hours
Third Maintenance	1,800 hours
Repair	5,000 hours
Overhaul	10,000 hours

- B767 and B757

A-Check	250 hours
C-Check	15 months

The following are the findings made during the field survey;

a) Training course

In general, the training courses for employee in every field are prepared in the training center. However, required courses such as training course forA-310/ B767, which are not available, may be prepared and conducted by ATK.

For example, courses for A-310/B767 maintenance are conducted as follows;

	B767	A-310
Basic (General)	Tashkent*	
Basic (Aircraft Model)	Boeing	Tashkent*
	PWA	
OJT (on the job training)	Tashkent*	Lufthansa
Working Experience		Lufthansa

*Instructors are from Lufthansa

b) Approval for mechanic license

Current authorized mechanic for A-310 are approved by the French authority and authorized mechanic for B767 are approved by Uzbekistan authority in the agreement with the Bunnuda authority. This arrangement stands valid as long as support and instruction by Lufthansa is retained.

c) Maintenance for A-310 and B767/B757

Maintenance agreement with Lufthansa, which covers heavy maintenance of aircraft and its components has been executed effective until February 1999.

d) Foreign Repair Station Certificate

Preparation for application to JAA is almost completed in ATK, which is to be rated as line maintenance, and is under progress in Repair Plant No.243. In addition to the above, application to FAA is planned.

e) Fleet Plan

Serviceable ratio of eastern-built aircraft such as IL-62 is fairy low at 40%, which does not allow them to fly any chartered flights.

To improve the ratio, retirement program for time/cycle expired aircraft and storage program for non-operated aircraft are in process.

f) Maintenance Planning

Current maintenance plan (application of maintenance program) is based on Lufthansa's. However requirement approved by the French authority for Uzbekistan Airways is not identical to that for Lufthansa, so that modifications are applied.

As soon as possible in near future, NAC will leave its own maintenance plan, which complies with, and is approved, by the French authority.

g) Manual

Manual used for maintenance of western-manufactured aircraft are written in English and for eastern-manufactured in Russian.

h) Record Keeping

Records are kept mainly as manuals (not on computer systems). This in not no different from western airlines.

i) Recurrent Training

Training program includes recurrent training, which is quite identical to that in western airlines.

j) Monitoring

Monitoring system works effectively the same as in western airlines.

k) Calibration

Calibration of equipment and instruments is performed in accordance with "state standards".

l) Engineering Approval

Engineering approval is granted mainly by manufacturers and by the authority when needed. This is a identical procedure adopted also by western airlines.

7.6.12 Overall Review of Air Carrier Sector

(1) Management for Air Carrier Sector

As stated above, NAC was established as the civil aviation authority in Uzbekistan inheriting rules, airplanes as an important asset for air transport, airport and air traffic control system and facilities from the former Soviet Union after its dissolution.

Up to present, NAC has been responsible for all matters related to civil air transportation including control and making civil aviation policy, air transport services, operation of airport, providing of air traffic services. Among these functions, the air carrier sector (Uzbekistan Airways) is presently one of the most important and essential functions of NAC.

The major western airlines were initially established as national flag carriers with strong government support and protection, and a major part of their stock was held by government organizations. Recently, after increasing their capacity and performance both in operation and the financial aspect, they have been managed and operated as independent bodies or privatized companies.

However, compared with the management styles of western airlines, air carrier services are not clearly separated in NAC's management as an independent area. Management procedures of the air carrier sector seem to be very uncertain and not systematically

established due to the slow introduction of a self-supporting system and corporate policy.

(2) Sales and Reservations

As shown in **Fig. 7.6.3**, the sales division of Uzbekistan Airways seems less influential in making corporate planning, comparing with western airlines. It appears to engage in preparing the timetables. Generally, sales divisions of western airlines have strong powers in making corporate planning.

In the ear of the Soviet Union, all planning and management of air transport was made and controlled exclusively by Aeroflot, which had a huge air route network and a well developed computerized system. Without sales and reservation agents, salesmen, sales promotional activities, and advertising, handling volume of air passengers at Tashkent airport reached a considerable level. Its peak was around 1990, just before the collapse of the Union, and its volume was several times the present one. There must have been no need for sales activities.

During the field survey, it was not easy to obtain a published timetable of Uzbekistan Airways. Without a published timetable, how can reservations and sales promotion be made? Previously, a traveler would merely telephone Aeroflot for a reservation and get the necessary information. It might have been quite possible without a published timetable, because Aeroflot was a monopolized airline at that time.

Nowadays, Uzbekistan Airways is going to take an active part in the free open market in air transport of the world. Therefore, it is most essential for Uzbekistan Airways to establish a distribution system with proper timetables on time, especially in the international market. It is also necessary for the Airways to further strengthen its marketing activities, such as the distribution of timetables and sales promotion by establishing effective sales channels.

(3) Safe Operation

Uzbekistan Airways has just set up the line for modernization of their operations in all aspects along with introduction of western built aircraft. .

Uzbekistan Airways is carefully studying maintenance procedures, flight operations, sales, marketing, operation planning etc.. Basically it is developing an approach to the western world, such as concepts in western design and operation policy. Also, the new concepts of reforming its air carrier organization, which is the most essential element for "Safe Operation".

Their current status of aircraft maintenance and operation cannot be considered perfect for "Safe Operation". Especially the number of personnel required by the size of activity is not sufficient, for example, licensed mechanics for A-310 and B767.

The most important issue for "Safe Operation" in Uzbekistan Airways, when it tries to operate western-made aircraft, is its complete understanding of total concept for "Safe Operation" as adopted in western countries, seeing that this is not the basis on which the regulations are established.

These regulations are totally configured with reasonable harmony, and consist of regulations for manufacturing, certificates, maintenance and operation of aircraft, and regulations for airport, air route, navigation facilities and others.

It is most important to notice that every regulation specifies detailed procedures, personnel qualification requirements, facilities, equipment, systems and etc., and compliance must be

substantiated.

Moreover, it should be fully understood and appreciated in practice that regulations require not only formal procedures but also actual activities to comply with them.

(4) Aircraft Operational Productivity

It is clear that the current fleet is configured by accumulation of events, by which they have to comply with the then-current policy of the government.

Judging from the standard adopted by western airlines, it appears that NAC does not perform analysis of most efficient fleet configuration based on its route-structure.

However, introduction of new model(s) requires a large amount of foreign currency not only for payment of aircraft but also for furnishing equipment, facility, training and other aspects.

It is therefore reasonable to conclude that NAC should improve productivity at moderate and steady rate. At the same time, the target is the most effective fleet configuration on the basis of the criteria adopted by western airlines.

(5) Training of Cabin Crew

As stated above, the quality of cabin service of Uzbekistan Airways is not inferior to that of western airlines. However, plans and performance of training for cabin attendants on eastern built aircraft has not been established yet.

In emergency situations, the movement of cabin attendants is very important for assuring safe operation. Training for emergency evacuation with combinations of flight crew and cabin attendants is therefore vital indispensable.

CHAPTER 8

MODERNIZATION PLAN OF NAC AND RECOMMENDATIONS

CHAPTER 8 MODERNIZATION PLAN OF NAC AND RECOMMENDATIONS

8.1 General

The present NAC organization covers various roles and functions related to the civil aviation activities of Uzbekistan from policy making, airport management, air traffic control services, air transport services and management of subsidiaries, having a huge complex and with a large number of employees. However, the NAC organization and its infrastructure have many serious deficiencies, which need to be improved if air transport is to be efficient and effective in supporting the country's development.

Similar to the other countries in the CIS region, Uzbekistan is also faced with a big transition and confusion period in respect to both economic and social systems, and institutional structure after independence in 1991.

Firstly, one of the phenomena seen after independence was the remarkable decline of air traffic demand since 1992 in Uzbekistan as well as other CIS countries. Air passenger traffic volume of Uzbekistan in 1996 decreased to 25% of the 1991 figures, although the decline is becoming a gentle slope recently.

It is considered that the decrease in air traffic demand may be caused by the following reasons;

- Fall in air passenger demand due to economic reform and confusion in Uzbekistan;
- Impact from raising air fares and freighter rates due to price increase in fuel and other expenses;
- Stagnation and inactivity in trades and exchanges of persons and goods between Russia, in particular, Moscow, and CIS countries after breakdown of the former Soviet Union; and
- Collapse and breakdown of differentiated production systems among the CIS countries under the centralized planned economy previously controlled by Moscow.

Secondly, during the former Soviet Union era, not only air transportation but also other forms of transportation and communication infrastructures were well developed from 1970s to 1980s. However, after the breakdown of the former Soviet Union, these infrastructures were operated and managed without sufficient improvement and maintenance due to insufficient budget resources.

Thirdly, NAC has actively introduced western-built aircraft and equipment with western financial support, but, discrepancies between Uzbekistan standards/procedure and international standards/procedure are unfolding day by day.

Geographically and from the viewpoint of the existence of natural and tourist resources, Uzbekistan has a strong advantage and potential as an aviation transport center of the CIS region. Therefore, modernization of the civil institutional entity, as well as of the aviation infrastructure, is a main issue for this double land-locked country to achieve the above target, and to help in the implementation of a market-oriented economy.

8.1.1 Current Situation of World Civil Aviation

(1) Tendency for Open Skies Policy

Generally, international air transport services between two countries are operated under a bilateral air agreement, which defines such issues as nominated airlines to be operated between two countries, frequencies and locations served, tariff and "beyond rights".

However, since 1978, the government of The United States of America has been advocating an "Open Skies Policy" in its air talks with other countries. The main principle is to liberalize the air services market and to press for lifting of governmental regulations with regards to nominated airlines, frequencies, locations served and tariff. The USA has concluded "Open Skies Agreements" with 25 countries, including 11 European countries (Netherlands and Germany) and 5 Asian nations (Singapore and Malaysia).

Thus, the long-term outlook appears to set a new trend in the international civil aviation market. Uzbekistan Airways cannot avoid being past of this trend towards the liberalization of the civil aviation industries, as well as other trading business, and may have to come to terms with a wave of deregulation and liberalization measures from the outside world.

(2) Deregulation

Uzbekistan Airways is the only air carrier in Uzbekistan supported and controlled under governmental laws and regulations. Generally, a national flag carrier for international air transport services is to be protected by government policies serving the national interests, such as enhancement of national prestige, contribution towards international trade income, interests of national air passengers and promotion of development of national air industries.

However, the trend towards deregulation throughout the world is being extended not only to civil aviation industries, but also expanded widely from other businesses to social and economic activities. The questions of deregulation policies are not to consider profitability to the country, or to advocate the acceptance of such a view. Uzbekistan Airways will have to compete for its business under deregulated conditions with other major and powerful airlines in the future.

(3) Globalization and Mega-Carriers

In the course of the development process of the air transport business, various types of business tie-ups from joint operation and code sharing, to capital cooperation have been created among the world airlines, in order to expand and strengthen their competitive market.

With clear progress in the liberalization of the air transport business, strategic business cooperation is being formed between such major world airlines as KLM (Royal Dutch Airlines) and Northwest Airlines (USA), United Airlines (USA) and Lufthansa (Germany). Furthermore, new group formations based on business cooperation in international air transport is in progress between major airlines in the USA, Europe and Asia. Thus, the international air transport business is going through a transition towards global competition with the formation of mega-carrier groups.

(4) Privatization and Commercialization in the Aviation Sector

In many countries, airports and air navigation facilities have been developed on government budgets in the course of the development of social capital and infrastructure. However, many developing countries, and even some developed countries are suffering from difficulties in the procurement of funding resources required for infrastructure development, due to a shortage in national revenues and restraint policies on external loans.

Recently, to promote privatization and commercialization of national companies and to improve financial and operation efficiency, privatization policies have been adopted for the development of various infrastructures including airports in many countries.

Privatization of national companies may provide not only a financial solution, but also an improvement of service availability and operational efficiency to the public to suit user requirements.

8.1.2 General Issues for Modernization of Air Transportation

(1) Necessity for Restructuring of NAC Organization

The present organization of NAC is not like that of the governmental civil aviation agencies in many countries. In most western countries, there are clear divisions of responsibility, activities and institutional structure of organizations in the civil aviation sector.

These are largely classified into two organizations. The first behaves as a governmental agency, with the function of establishing regulations for aviation safety, airworthiness, market entry and licensing, airport and air traffic rules and services. The second provides air transport services in accordance with the rules on a commercial basis aiming at profits.

In the institutional structure of the present NAC organization, these two functions are combined and tenaciously held by one huge entity.

Regardless of the social framework, the governmental services are apt to falter due to the lack of a competitive spirit and customer-oriented services, and poor business effectiveness in general.

NAC is too big organization to be able to attend to detailed services, especially in the area of commercial business operation.

Therefore, in planning a restructuring of the existing NAC, it will be necessary to take into account the commercial viewpoint and ability of the system to support itself.

(2) Support of "Open Door Policy" by Aviation Sector Development

Now headed by a market-oriented, democratic-style government, Uzbekistan is slowly but steadily shifting its governmental policy from the former unified political and economic system, to a new market economy, pursuing an "Open Door Policy" creating favorable possibilities for attracting foreign investments.

In terms of assisting the "Open Door Policy" of the Government, development of aviation infrastructure and institutional modernization needs to proceed in such a manner as to facilitate and not obstruct the economic activities of the country.

(3) Activation of Role of Air Transportation

The role of air transport is very important for the development of economical and social activities. Taking into account the geographical characteristics of Uzbekistan, air transport, especially international air traffic, is an essential requisite for Uzbekistan. Uzbekistan lies in the middle of the Asian continent and has no access to the open sea.

Geographically, Tashkent is at the crossroads between the European and Asian countries and the city is a center of CIS economic links. Uzbekistan has long attracted the attention of the world with its historical heritage as a nodal point on the ancient silk route. Tourism is another major drive of Uzbekistan's air transport development, both domestic and international.

Consequently, activation of air transportation is one of the most important issues for national economic development. Especially, the strengthening and modernization of Uzbekistan Airways is an urgent subject.

(4) Redundancy of Employment in Organization

According to information available, the number of personnel belonging to NAC and its subsidiaries are counted at more than 16 thousand. Although this figure includes staffs carrying out non-aviation sector tasks in NAC, it is considered that present level of employment in NAC is rather supernumerary.

All airports in Uzbekistan are over-staffed compared to the volume of air traffic handled. These employees consist of specialists who have special skilled and of ordinary working staff.

Whether the future institutional position of the airport organization is that of a government organization or not, the airport operator and its employees will require to have a clear notion as to the need for providing efficient services to passengers and airport users.

From the viewpoint of a self-supporting business, it is also essential to be aware of the need for saving costs. In this regard, a reasonable restructuring of the manning in respective units in NAC and establishment of training programs for airport staff will be a very important issue in the future.

(5) Securing of Safe Operation

In any public transport system, provision for safety of operation is the primary subject. Especially, safety of operation services in air transport is the first priority. Securing safety of operation depends on various elements, such as, level of aircraft maintenance system, capability of flight crew, completeness of air navigation facility functions and efficiency of air traffic control services.

To secure safety of operation of air transport, in parallel with the implementing of modernization of the aviation infrastructure, concentrated effort should be paid to securing safe operation.

8.2 Restructuring Plan of National Air Transport Administration

8.2.1 Recent Restructuring Plan

(1) NAC's Restructuring Plan for Organization

NAC had developed "a concept for functioning of Civil Aviation of Uzbeksitan" under the circumstances of market economy proposing to create a Holding Company of NAC so as to give financial independence to NAC. The concept had been approved by NAC Board in 1995.

Recently, NAC is finalizing restructuring plan of the existing organization. According to the brief explanation given through the meeting with the General Director of NAC during final stage of the second field survey, main points of the plan are as follows;

a) To create a State Civil Aviation Supervisory Committee under the Cabinet Ministers, independent of NAC organization, in order to control and supervise air safety related to the civil aviation including air traffic, airport facilities, airworthiness of aircraft and licensing of airlines

b) To divide Uzbekistan Airways into the following three affiliated companies;

- International Air Company to operate western fleet, B-767, B-757, A-310 and RJ-85;
- Regional Air Company to operate eastern fleet, IL-96, IL-62, Tu-154, An-24, Yak-40, and IL-114;
- Air Cargo Company to operate cargo jets, IL-76 and An-12

General tendency of world airlines now is going toward unification and alliance of airline companies aiming at survival in the struggle of existence.

However, the situation in Uzbekistan seems a little different. Uzbekistan Airways has to strengthen its competitive capability to earn much hard currency from the international routes. This is very urgent matter for the Uzbeksitan Airways.

The modernization of all of the present Uzbeksitan Airways would impose tremendous burdens and time on the airlines, especially in the field of staff training and maintenance of aircraft. Regional routes and cargo fields could be regarded as second priority areas because these routes are less competitive.

In order to utilize company energy and its limited resources, it seems very reasonable to separate international routes and concentrate the company's power on them in order to have a better competitive capability among other strong airlines.

(2) Russian Organization for Civil Aviation Administration

The Federal Aviation Authority of Russia (FAAR) was newly established in May 1996, with responsibility for management and regulation of civil aviation in Russia. In March 1997, the State ATM (Air Traffic Management) Corporation was created to take over responsibility for air traffic control under the control of FAAR.

The State ATM Corporation is responsible for operation performance of the civil air traffic management system, including the collection of overflights fees, airspace management, route planning, central flow management, aeronautical information services, meteorology, training, charges and operational issues. Responsibility for

certifications, inspections and safety remains with the FAAR. The main financial source for the State ATM Corporation is air navigation fees.

8.2.2 Alternative Plans for Restructuring of NAC

(1) Basic Philosophy

Considering the results of review on the present administrative organization and circumstances surrounding the aviation sector of Uzbekistan,

- ***It is recommendable for NAC and the Government of Uzbekistan to take first steps toward the revitalization of the aviation sector, by transforming the existing units of NAC into some independent organization(s). To be more concrete, it is recommended that a clear line should be drawn between the services by such governmental administration bodies and the services by commercial enterprises.***

(2) Alternative Plans for Restructuring

Basic concept of alternatives for restructuring of NAC organization is to aim at establishing responsible units in accordance with the particular purpose of activities and revenues. This restructuring shall be made gradually envisaging a future clear separation of functions between the government body and the commercial unit.

In line with the above concept, three (3) alternatives of restructuring plan of NAC are proposed below.

a) Alternative A

Fig. 8.2.1 shows the schematic restructuring plan of Alternative A.

Alternative A is intended to newly create Department of Civil Aviation (DCA) as a governmental body responsible for civil aviation policy and regulation, and certification of airmen, airlines, aircraft and airports. New DCA will be formed by transferring necessary functions and personnel to conduct its purpose from the existing NAC.

Air carrier units, airport units and air traffic control unit of NAC will remain under the control and responsibility of NAC.

This alternative is almost the same structure as the present NAC organization, except for setting up the DCA. However, expenditure required for maintaining the DCA is to be basically covered by the state budget, and slightly supplemented by certification fees of aircraft, airmen and airports.

b) Alternative B

Fig. 8.2.2 shows the schematic restructuring plan of Alternative B.

In addition to the functions of the DCA in Alternative A, DCA in Alternative B intends to cover air traffic control services and operation/maintenance of communication facilities and air navigation aids in Uzbekistan.

Air carrier units, airport units of NAC will remain under the control and responsibility of NAC.

Expenditure required for maintaining the DCA is to be basically covered by the state budget and certification fees, and supplemented by air navigation facility charges.

c) Alternative C

Schematic restructuring plan of Alternative C is presented in **Fig. 8.2.3**.

Alternative C is intended to clearly separate air carrier unit from the governmental organization.

The air carrier unit is to be managed and operated under the self-supporting account system, and shall concentrate on airline business. The air carrier unit (Uzbeksitan Airways) shall be intended to transfer from the state companies to privatized company, if such circumstance come.

DCA should be responsible for operation and management of airports and air traffic services, in addition to the civil aviation administration.

In addition to the functions of the DCA in Alternative A, Alternative C intends to cover air traffic control services and operation/maintenance of communication facilities and air navigation aids in Uzbekistan. Tashkent airport is to be managed and operated by TAE, but its ownership will be in the hands of DCA.

Expenditure required for maintaining the DCA is to be basically covered by the state budget and revenues from certification fees, and supplemented by air navigation facility charges and revenues from airports, if possible.

(3) Model for Organization for Department of Civil Aviation

Simplified model of organization for Department of Civil Aviation set up referring the organization of the Civil Aviation Bureau of Japan is shown in **Fig. 8.2.4**. Principal roles and functions of the new "Department of Civil Aviation" should include the following matters;

- To make aeronautical policy, laws and regulations related to air transport, airports, air navigation facilities and air traffic services;
- To negotiate and conclude on air agreements;
- To construct, operate and maintain the aviation infrastructure;
- To issue airport licenses;
- To issue aircraft registration certificates;
- To issue airworthiness certificates;
- To issue licenses for air transport services;
- To issue certification for airmen including airline transport pilot, senior commercial pilot, commercial pilot, private pilot, flight navigators, flight engineers, flight radio operators, aircraft maintenance technicians and aircraft overhaul technician;
- To designate paths through airspace, as airways, appropriate for the navigation of aircraft;
- To provide air traffic control services; and
- To determine and control rules and regulations on matters related to civil aviation activities in Uzbekistan.

The Department should have the following divisions; the Administration Division,

Aerodrome Division, Technical Division, Air Traffic Division and Air Safety Supervision Division.

Functions, subdivision of the Department and appropriate number of staff are summarized in **Table 8.2.1**.

Number of staff required for maintaining the DCA should be determined through deep analysis on responsibility and task volume of each subdivision to bear, and transfer of relevant responsibility from the existing management of NAC. However, attention should be paid so as not to have an excess manning level

Table 8.2.1 Functions and Staff of Subdivision in DCA

Division	Subdivision	Functions
Administration Division	General Affairs	Administration of bureau, registration of airplanes
	International Air Transport	International civil aviation policy, bilateral aviation operations, permit and approval of foreign airlines
	Aviation Industries	Supervision of aviation companies (licensing, airfare approval)
	Accounting and Provision	Budgeting, accounting and auditing, procurements of materials, control of national property, management of special account for airport development
Aerodrome Division	Administration	General affairs of aerodrome development, establishment and management of aerodromes
	Planning	Planning of aerodromes
	Environment	Airport environmental improvement measures
	Construction	Construction, improvement and maintenance of aerodrome
Engineering Division	Flight Standards	Air carrier flight operation, pilot-in-command route and airport qualifications, aeronautical information publication
	Airworthiness	Aircraft airworthiness and maintenance
	Personnel Licensing	Competence certification and medical certification for airmen
Air Traffic Division	ATS Planning	Standards development and planning for air traffic services
	Air Traffic Control	Air traffic control procedures, controllers training and licensing, air space program, instrument flight procedures
	Operations and Flight Inspection	Air traffic information services, aircraft search and rescue, aeronautical facility flight inspection
	Radio Engineering	Construction and maintenance of aeronautical safety radio facilities

(4) Requisites for Implementation of Restructuring

The Government of Uzbekistan has adopted a gradual reform of the economic system from a centralized planned economy to a market-oriented economy, emphasizing the promotion of privatization of state companies expanding from small firms to medium and large enterprises.

If NAC will substantially pursue the restructuring of the present organization, it is strongly recommended that the following matters should be taken into account:

a) Centralized control and management system should be improved so as to transfer responsibility and decision making to the respective divisions;

b) Disclosure system of information should be established according to progress of privatization. No foreign investor and financier should be allowed to invest

without information relating to financial and management situation;

c) Accounting system should be modernized incorporating international accounting practice;

d) Statistic data processing system should be developed;

e) Difference of technical standards between western and eastern systems should be reviewed and revised;

f) Reduction in number of staff should be reviewed and revised in accordance with the job volume and financial aspects.

In order to realize the restructuring of NAC, needless to say, self-help endeavor of each organization should be required. At the same time, reform of social, progress of economic and financial market reform in Uzbekistan, especially in respect to stability of the exchange rate, settlement system for commercial transactions, and finance and capital trading market will also be required.

Fig. 8.2.1 Alternative - A for Restructuring Plan of NAC

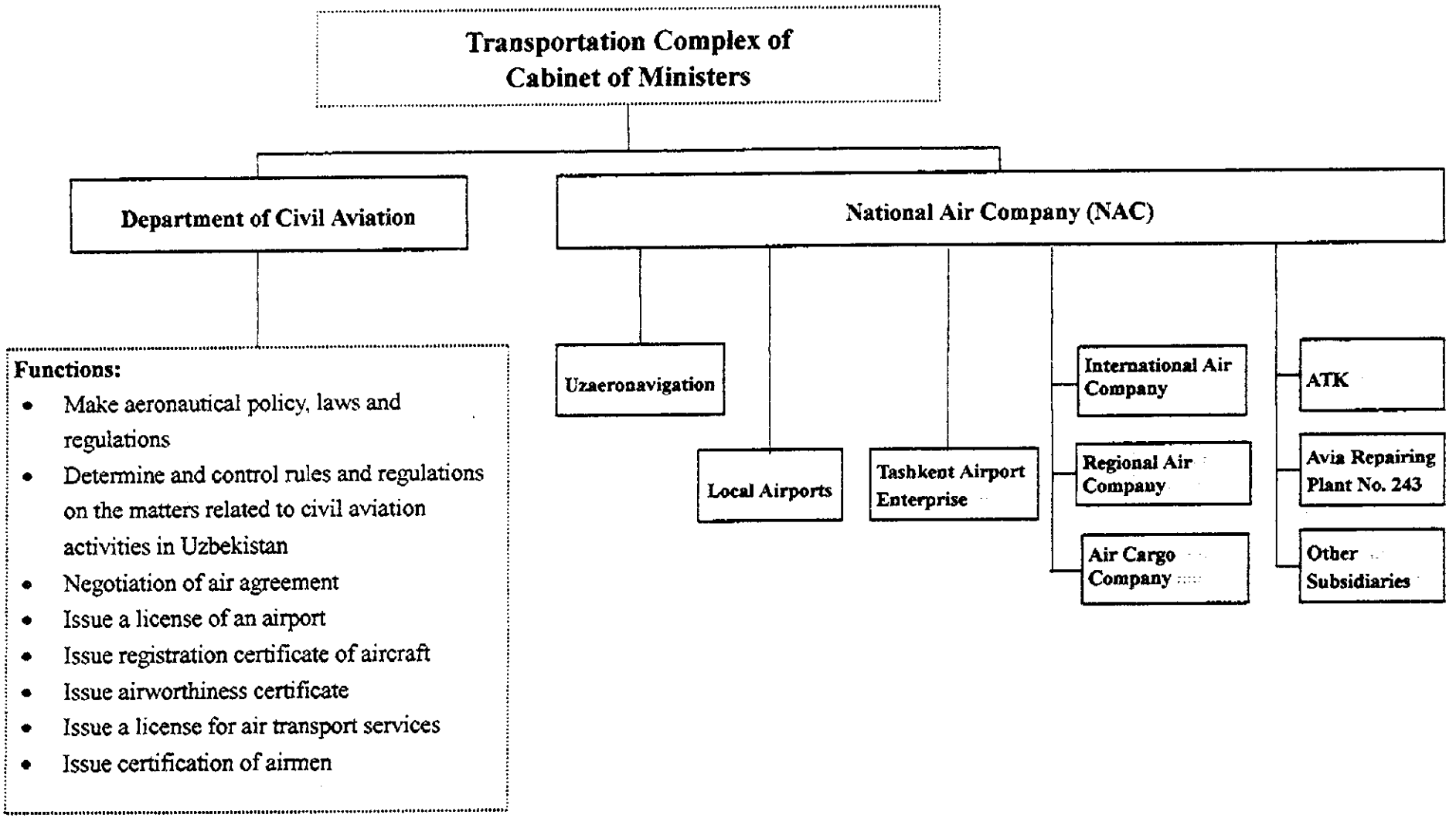


Fig. 8.2.2 Alternative - B for Restructuring Plan of NAC

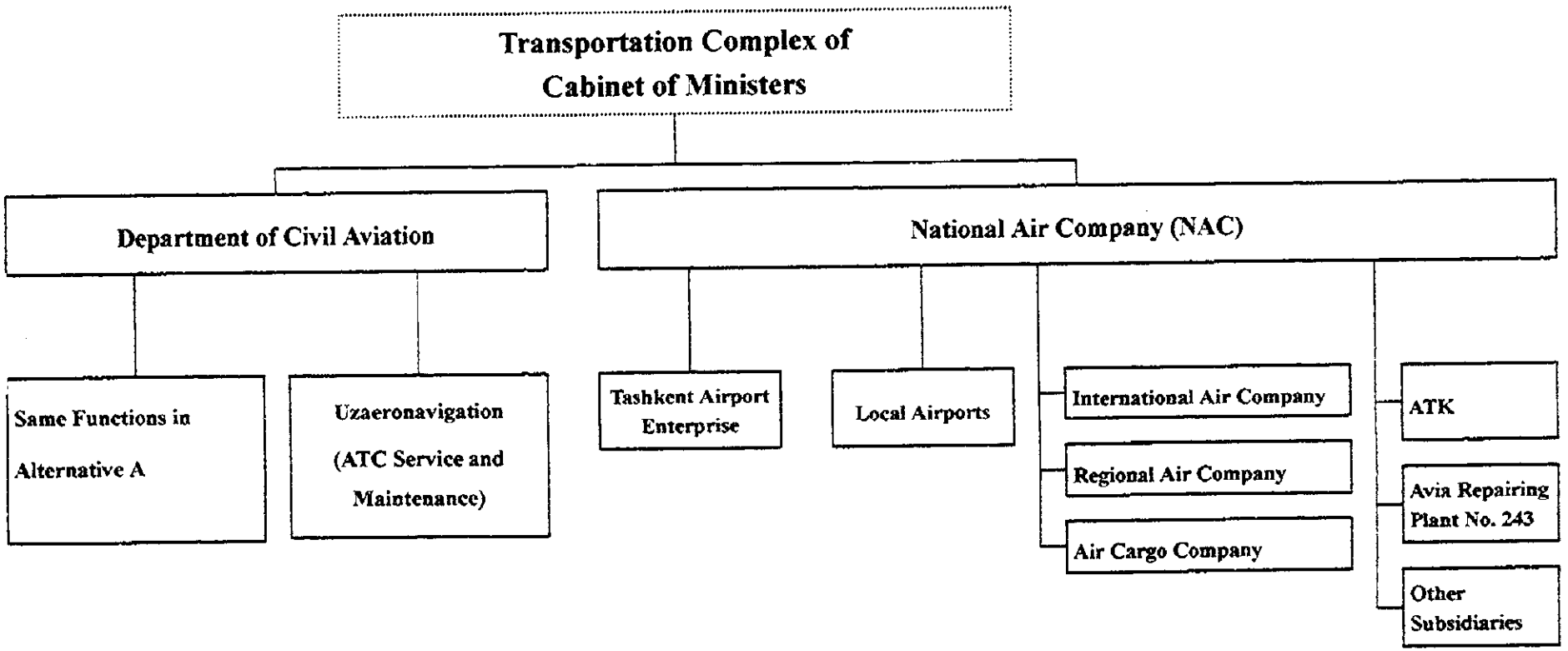


Fig. 8.2.3 Alternative - C for Restructuring Plan of NAC

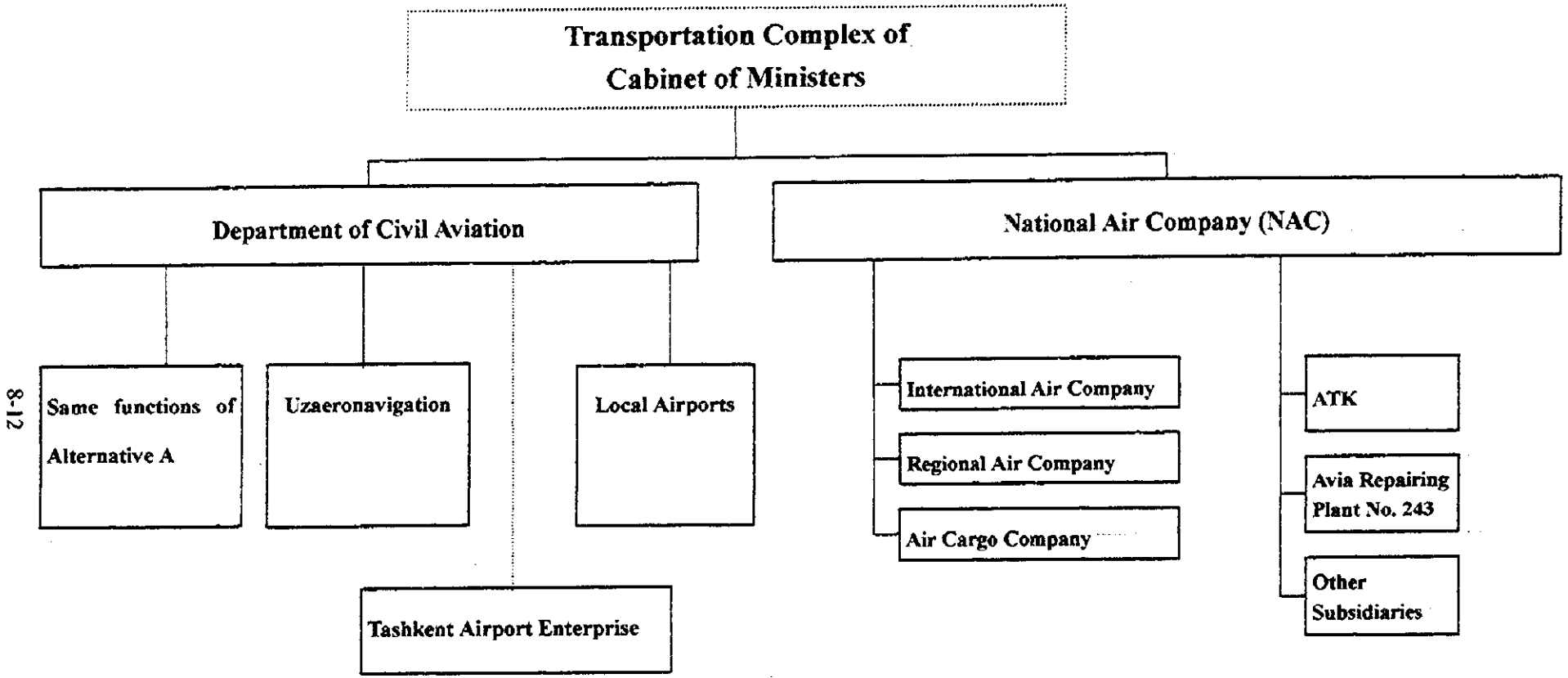
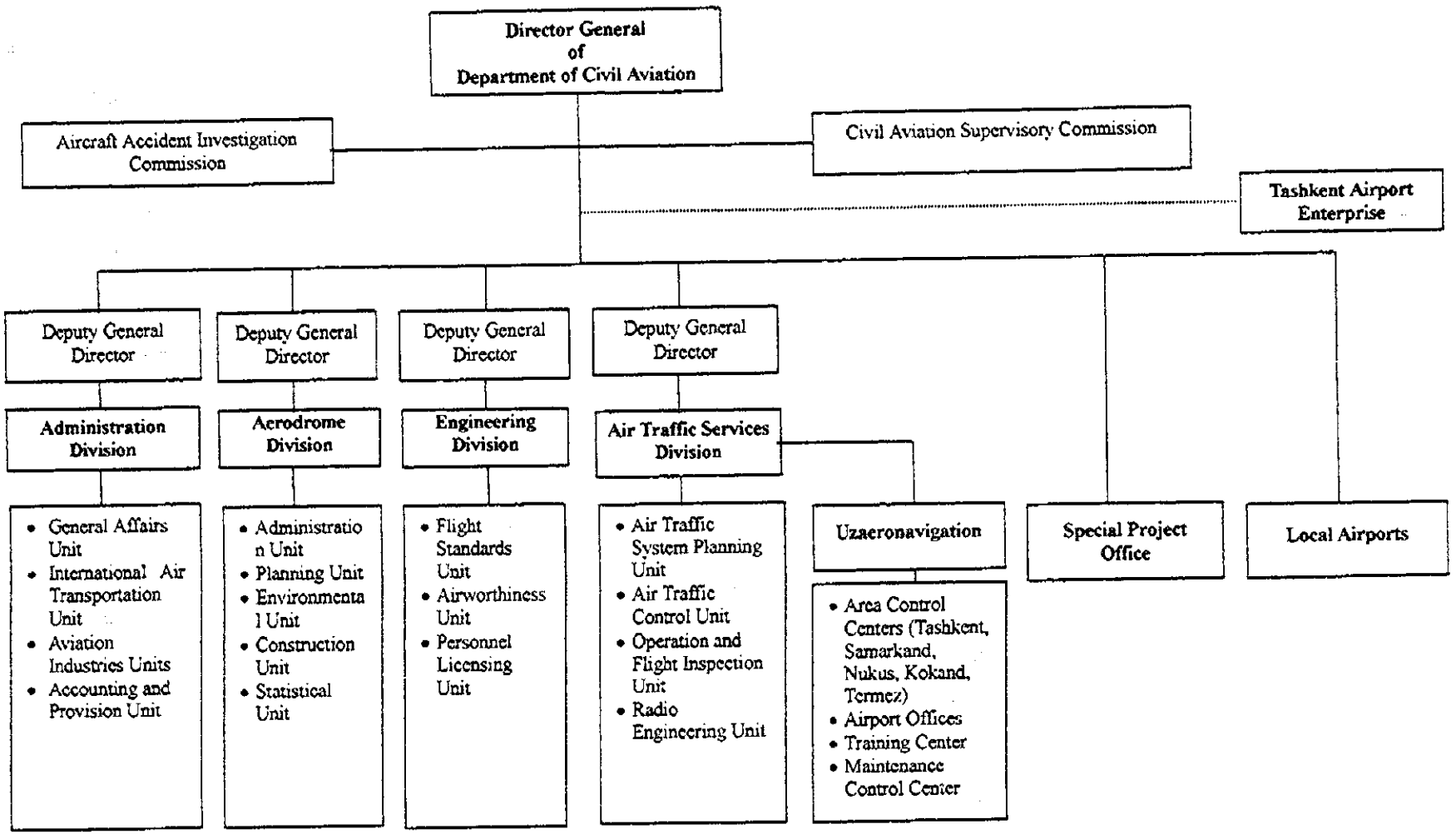


Fig. 8.2.4 Model of Department of Civil Aviation (DCA)



8.2.3 Reforming of Revenue Components and Accounting System

This section discusses the present revenue sources and reallocation of its component in accordance with the assumed restructuring plan of NAC.

(1) Overview of Present Revenue System

According to the information provided by NAC, the present revenue items of NAC as a whole as listed in **Table 8.2.2** are intermingled with airline-hood revenues, airport-hood revenues and revenues from other activities.

As to the airline-hood revenue items, there are items of "Regular Transportation", "Order and Charter", "Aircraft Lease", and "Agriculture Aviation", which occupy 77% of total revenue of NAC in 1996.

On the otherhand, regarding the airport-hood revenues, there are "Commercial Passenger and Cargo Services", "Aircraft Departure", and "(%) of Passenger and Cargo Revenue". Those items are normally considered to be revenues for airport operation. However, for western airlines, they are considered the expenditure items.

TAE is a financially independent organization in NAC group, but, substantially managed and controlled by NAC headquarters. Its revenue is approx. 10% of the total revenues of NAC. TAE, as well as other local airports, is presently conducting passenger check-in services and handling, baggage handling, and services for aircraft on the apron. Those tasks are considered to be airline's jobs in the western airlines. In this meaning, revenues of TAE are also intermingled with airline-hood revenues and airport-hood operation.

Table 8.2.2 Major Revenue Items of NAC

Revenue Items	Revenue in 1996 of NAC Total (Million Sum)	%	Revenue in 1996 of TAE (Million Sum)	%
1. Regular Transportation	7,137.2	68.1		
2. Commercial Passenger & Cargo Services	258.8	2.5	189.1	17.8
3. Aircraft Departure	924.5	8.8	303.1	28.5
4. Order and Charter	546.5	5.2		
5. Aircraft Lease	214.6	2.0		
6. (%) of Passenger & Cargo Revenue	133.6	1.3	20.3	1.9
7. Agriculture Aviation	136.8	1.3		
8. Other Revenue	1,127.3	10.8	550.6	51.8
9. Total of Revenue	10,479.3	100	1,063.5	100

(2) Reform Plan of Revenue Sources and Accounting System

It is necessary to reform the revenue components of NAC in accordance with the activities of correspondent units.

- ***It is recommended that revenue sources and accounting system should be reformed in accordance with the restructuring plan of the NAC organization, taking into account the clear separation of activities between government, airline and airport services.***

Table 8.2.3 shows an example of reform plan of revenue sources based on Alternative C.

If DCA is established, the DCA should have revenues of local airports from landing charges, passenger airport charge, car park charge and concession fee, and charges from air navigation facilities and meteorological services.

Tashkent Airport Enterprise will have a landing charge, passenger airport charge, fuel supply, car park charge and concession fees from space rental for airlines and concessionaires. However, passenger, cargo and aircraft handling charges, which are presently allocated to TAE revenues, cannot be received by TAE. Such tasks should be managed under the command line of Uzbeksitan Airways (air carrier unit).

Revenue items of air carrier unit (Uzbeksitan Airways) will only be airfare of transportation services of passengers and cargo. Revenues from charter flights and aircraft lease may belong to Uzbekistan Airways.

Table 8.2.3 Reallocation of Present Major Revenue Sources (Example)

Revenue Resources	Department of Civil Aviation Uzaeronavigation Local Airports	Tashkent Airport Enterprise	Uzbekistan Airways	Self Supporting Company
1. Landing Charges	X	X		
2. Charge of Air Navigation Use	X			
3. Charges for Meteorological Services	X			
4. Transport Services of Passenger, Cargo and Mail, charter and aircraft			X	
5. Fuel Supply		X		
6. Passenger Airport Charge	X	X		
7. Catering Services				X
8. Car Park Charge	X	X		
9. Various Concession Fee	X	X		

8.2.4 Law and Regulation for Civil Aviation

Except for the list of laws in general, no information concerning the Aviation Law of Uzbekistan and the relevant regulation was available. It is therefore quite difficult to review and discuss the issues and problems in the acting Aviation Laws.

However, for the development of the aviation sector of Uzbekistan in the future, it seems useful to have the knowledge of aviation laws of western countries in general. The essence of common aviation laws will be described as follows.

(1) Purpose of Aviation Law

The Aviation Law in Japan is based on the provisions of the Chicago Convention of 1944, and International Civil Aviation Organization. The purpose of the aviation law is to promote the development of civil aviation by providing for methods to ensure the safe operation of aircraft.

(2) Contents of the Aviation Law

To accomplish the purpose of the aviation law, the main contents can roughly be divided into the following eight items:

a) Both registration and the acquisition of nationality are stipulated in accordance with the provision of the law.

b) Aircraft are to be airworthiness certificate under the condition that the strength, construction and performance of the aircraft comply with the airworthiness standard specified in the law.

c) In order to secure the aviation safety, competence certification is issued to the personnel working in the aviation services.

d) Provides the requirement for the establishment of aerodrome and the installation of air navigation facilities.

e) Provides the standard and manuals necessary for the safe operation of the aircraft.

f) Provides licensing standards for the scheduled air transport service.

g) Provisions which stipulates the flights and services of foreign aircraft.

h) For the purpose of securing the aviation safety, various penal provisions are stipulated.

(3) Relations between Aviation Law and Organization of NAC

The object of aviation administration is to accomplish the purpose of the aviation law. Presently, although NAC is the state air transport company, NAC also is the only governmental organization with the overall administrative responsibility for civil aviation in Uzbekistan.

8.3 Improvement Plan for Management and Operation of Airports

8.3.1 Major Issues in Management and Operation of Airports

Present problems related to management and operation of Tashkent and other local airports are summarized, although collection of information and data was limited, as follows;

(1) Type and Function of Airport Administration Organization

Among airports for civil aviation use in Uzbekistan, only Tashkent airport is nominally managed and operated by an independent body with its own accounting system. Other local airports are directly managed by NAC through each local airport.

Tashkent airport as well as local airports has provided many different fields of services, ranging from airport operation and maintenance to check-in services and passenger/cargo handling. Ground support services to parked aircraft on ramp are also provided by staff belonging to the airport unit. This means that the airport unit has two different business functions, i.e. airport operation business and airline business.

In general, the airport business and airlines business functions are separated very clearly in western countries. Airport business is mainly to provide space and facility to airlines and passengers in order to obtain revenues. Airlines business is mainly to provide transport services to passengers and cargo in order to earn revenues. Type and characteristic of activity are far different between both businesses.

Intermingling of management, functions and staff in airport administration organization will result in poor efficiency and functions as shown below:

- No transfer of responsibility and command line;

- Inefficiency of business planning (corporate plan) and control;
- Difficulty of trouble-shooting in account system and performance.

(2) Redundancy of Employment

According to information available, the number of personnel belonging to airport organization in NAC is more than 6 thousand, including Tashkent and local airports. Although this figure includes staff carrying out airline-hood tasks, it is considered that the present level of employment for airport operation is rather supernumerary.

All airports in Uzbekistan are over-staffed compared to the volume of air traffic presently handled. These employees consist of specialists who have special training and of ordinary working staff.

Whether the future institutional position of the airport organization is that of a government organization or not, the airport operator and its employees will require to have a clear notion as to the need for providing efficient services to passengers and airport users.

From the viewpoint of a self-supporting business concept, it is also essential to be aware of the need for saving costs. In this regard, a reasonable restructuring of the respective airport organization and establishment of training programs for airport staff is very a important issue.

(3) Superannuating of Airport Facilities

Most airport facilities had been constructed in 1970s/80s under the former USSR control. After collapse of the USSR, rehabilitation had not been conducted frequently and timely. Presently, it is time to improve these facilities in order to upgrade efficiency and quality.

Improvement of these facilities will require huge investment and time. Therefore, it will be desirable to have more analysis and planing on budgeting for improvement.

(4) Differences with International Standards

Airport facilities and air navigation aids had been planned and designed based on the MAK standards. After the independence from the former USSR, NAC installed, at Tashkent airport, western-made air navigation aids which are designed to mmet ICAO regulations and MAK. Double standards may lead to confusion in design, operation and maintenance procedures of facilities. Furthermore, training for western-made facilities will also be required.

(5) Low Service Level for Passenger Comfort

Impression on comfort of passenger at airport is generally determined by physical conditions of airport facility, and attitude and procedure of staffs at airport and airlines.

Improvement of physical conditions of airport facilities is matter of financial arrangement and maintenance practice. As a project for improving the existing terminal building at Tashkent airport is being carried out with the finance of EBRD (European Bank for Rehabilitation and Development), the terminal building facility will be expected to become better.

As far as passenger-handling procedures in Tashkent airport are concerned, the present service level is below international practices. Customer (passenger)-oriented services are not founded in the course from check-in to boarding, and from arrival to immigration

procedure.

For example;

- slow processing in check-in, and immigration and customs inspections
- no explanations to passengers in case of delay of flight schedule
- bad arrangement of ramp transportation for arrival
- high fee level of use of business lounge
- no adequate facilities for passenger relaxation such as lounges, restaurants

(6) Accounting System of Airport

TAE has its own accounting system, but is largely controlled by the NAC headquarters. Revenues and expenditures of local airports are reported to NAC headquarter. It seems that there is no procedure for identifying the clear financial and economic responsibility of each self-controlled operation unit.

Local airports also prepare respective revenue and expenditure sheets every year and report them to NAC headquarters. Financial and accounting sheets seems not to clearly reflect the respective revenue and expenditure items required for airport operation, and their use is not conducive to an analysis for the purpose of future operation and financial planning.

(7) Improvement of Revenue Resources

Major revenue items of Tashkent Airport Enterprise consist of "Commercial Passenger and Cargo Services", "Passenger Airport Charge ", "Aircraft Departure" and "(%) of Passenger and Cargo Services".

Revenues from non-airport operations such as room rental and concession charge are not shown in the balance sheets of Tashkent airport. Revenues from non-airport operation are seriously important to airport operators in western airports. Because, it is getting quite difficult for western airport operators to manage profit positive from revenues emerging airport operation.

Therefore, it will be necessary for the airport operator to take active promotion measures, for example, expansion of the concession area, rental space for advertisement and provision of car park charge, in order to increase revenues from non-airport operation.

(8) Maintenance Procedure and Training

Present maintenance procedures stressed the need for repair work rather than prevention maintenance due to the financial reasons and lack of spare parts. Staff for maintenance unit seemed to be well trained. Equipment for maintenance of airfield facilities is very superannuated. Establishment of maintenance procedure is required by stressing prevention maintenance.

8.3.2 Options for Airport Administrative Organization

(1) Type of Ownership/Operator of Airports

Traditionally, in many countries, airport land and basic infrastructure such as runway, air navigation facilities and air traffic control facilities have been constructed, operated and owned by the governmental organizations.

Currently, however, there are several variations and exceptions to these traditional rules. The costs to government for operating and maintaining airports can be reduced, for example, by transferring smaller airports from government to come under the control of local authorities.

Alternatively, it may be possible to grant a private company responsibility for operating and maintaining an existing airport.

As another option, in many countries, major airports are being constructed or transferred to autonomous and financially self-supporting airport authorities.

In practice, it is not necessary to have one common form for all civil airports in a country. Summering above, form of airport administration is commonly classified into the following four types:

- Constructed, owned and operated by a national agency or Corporation set up for the purpose;
- Operated and owned by provincial or local government;
- Owned and operated by a privatized airport company;
- Combination of above types to suit the particular circumstances and aviation background of a country.

Whichever policy it adopts, the national government must inevitably remain responsible for jurisdiction over the airport.

At present, there are a variety of forms for administration organization of airport taken by respective countries in the world. **Table 8.3.1** shows several examples of type of ownership and operators of airports in Japan and other Asian countries.

Table 8.3.1 Ownership and Operators of Airports in Asia

Country	Organization	Type	Airports
Japan	Ministry of Transport	Government	Owns and operates 2 international airports and 20 local airports. Owns 5 local airports, but, their operation is conducted by local government.
	New Tokyo International Airport Authority	Public Corporation	Owns and operates New Tokyo International Airport.
	Kansai International Airport Company	Private Company	Owns and operates New Kansai International Airport.
	Local governments and municipalities	Local Government	Owns and operate 55 local airports respectively.
Thailand	Airport Authority of Thailand	Public Corporation	Owns and operates Bangkok International Airports and other local airports.
Malaysia	Ministry of Transport	Government	Owns and operates several local airports in Malaysia.
	Malaysia Airport, Bhd	Public Corporation	Operates 21 airports in Malaysia.
Indonesia	Ministry of Communications	Government	Owns and operates 161 airports.
	Airport Companies No.1 & 2	Public Corporation	Operates 18 airports.
	Local governments, private companies and missionary	Local Government	Operates more than 380 small airports
Philippines	Department (Ministry) of Transportation & Comm.	Government	Owns and operates more than 80 airports.
	International Airport Authorities	Public Corporation	Owns and operates 3 international airports.

(2) Options for Airport Administrative Organization Type

If an airport is intended to operate under self-supporting account system, restructuring of the present airport organization will be required in order to attain efficient operation and profitable management.

From the viewpoint of self-supporting account system, the following options are proposed:

Option 1: Independent State Corporation

Financially, institutionally an independent State Corporation.

In this case, airport operation services and airline services should be clearly separated, including command line, and account system.

Major financial resources of the corporation will be landing fee, passenger airport charges and concession fee. Presently, Uzbeksitan Airways doesn't pay landing fee. However, after the restructuring of NAC, the Corporation should collect the landing fees from Uzbeksitan Airways.

Air traffic control service should remain under the responsibility of the new civil aviation administration body.

Option 2: Airport Administration Authority

All airports including Tashkent and local airports belong to the Authority.

Revenue from Tashkent airport will be used for expenses for local airports, which cannot be operated financially without financial back-up from TAE or other sources.

Air traffic control service should remain under the responsibility of new civil aviation administration body.

Option 3: Local Government

Local government is responsible for operation and maintenance of the airport. Main revenue sources will be landing charge, passenger airport charge and concession fees.

Air traffic control service and responsibility for regulatory for airports should remain under responsibility of new civil aviation administration body.

Option 4: Privatized Airport Company

A privatized airport company operates under a commercial concept.

In general, a private company has to operate the airport, seeking commercial profit in a market-oriented economic system, with revenues from airport users of passengers and airlines. Therefore, provision of comfort and quality service might rather be a matter of secondary importance.

However, as an airport facility is a kind of public infrastructure for the state and community, provision of services at airports is considered to be a public utility, selection of privatized airport company should be analyzed and evaluated with careful deliberation.

Even if the airport is privatized, air traffic control service and responsibility for regulation for airports should remain under the responsibility of the new civil aviation administration body.

Option 5: Build, Operate and Transfer (BOT)

A private concession company authorized by NAC, or new civil aviation administration body.

The government grants a concession to a private firm to build or improve a specific airport facility and to operate it and obtain revenues from its operation for a designated period. After the expiry of the designated period, such facility may be transferred to the government.

A range of BOT may vary from a full set of airport operation to a part of airport facility such as passenger terminal building, car park.

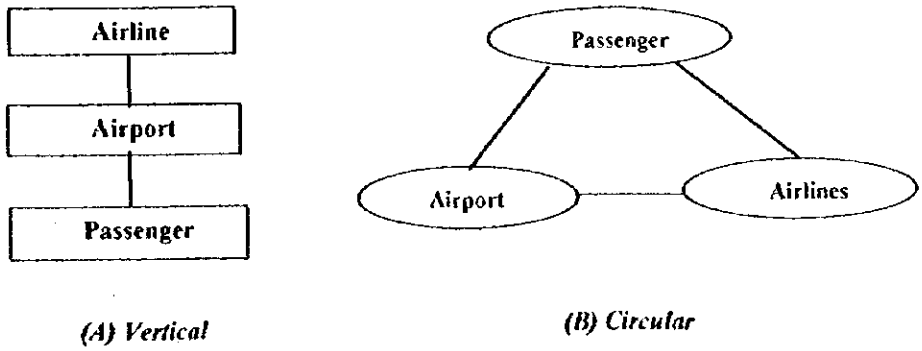
In this case, air traffic control service should remain under the responsibility of NAC, or new civil aviation administration body.

(3) Process to Self-supporting Organization

Development and management of airports traditionally, even at present, belongs to the government. Recently, attempts at commercialization, privatization and the establishment self-supporting airport systems are being made in the aviation sector in many countries.

Airports including ATC systems are an indispensable element in air transportation. The airport is a point of contact between air transportation and land transportation. Therefore, it is necessary to consider the relationships among elements relevant to air transportation in the selection of organization style. Principal elements of air transportation consist of three elements, i.e. airlines, airport including ATC system and passengers and visitors.

If the airport operator aims at self-supporting organization in order to reduce the burden to the government, it is necessary to recognize that the relationship between three elements is not "Vertical" as shown in **Fig. 8.3.1 (A)**, but "Circular" as shown in **Fig. 8.3.1 (B)**.



(A) Vertical *(B) Circular*

Fig. 8.3.1 Relationship between Passenger, Airport and Airline

The following points should be taken into account in process to self-supporting system of airport organization:

- Efficiency of services to respond with airport users (visitor, passengers, airlines);
- Review and adjustment of number of airport staff in accordance with tasks;
- Measure for increasing of revenues from non-airport operation;
- Incentive privilege regarding taxation.

8.3.3 Proposed Airport Administration Structure

(1) Review on Present Manning Level

Compared with the number of airport administration staff in Japan, the number of personnel engaged in management and operation services of airports in Uzbekistan is rather high, against the current handling traffic, as shown in **Table 8.3.2**.

At Tashkent airport, the number of staff who are directly in charge of airport operation and maintenance are estimated at 23 % of the total employment, plus several percentage within part of "Passenger and Cargo Services". Furthermore, 18% of the staff is in charge of non-airport services in the TAE organization.

Table 8.3.2 Number of Staff of Present Airport Organization

Airport	Administration & Others	Technical Staff	Passenger & Cargo Services	Airline-hood Services	Non-Airport Services	Total
Tashkent	344	382	1,280	565	546	3,116
	11%	12%	41%	18%	18%	100%
	344	382	1,280	565	-	2,570
	13%	15%	50%	22%	-	100%
Namangan	31*	35*	118*	52	-	236
Termez	31*	36*	119*	53	-	238
Nukus	72*	84*	278*	121	-	555

Note: * Number of staff in each section is estimated using the composition rate of Tashkent airport.

The New Tokyo International Airport Authority, which is the airport administration body established especially to manage and operate the New Tokyo International Airport in Japan, has about nine hundred (900) staff, including management and operation sections, and construction offices. Handling volume in 1996 was more than 24 million passengers and 1.5 million tons of cargo.

Kansai International Airport Company, which was established in 1995, as the first private company for airport administration in 1995, has about five hundred and sixty (560) staff. Handling volume in 1996 was approx. 16 million passengers and 660 thousand tons of cargo.

At the above both airports, the airport administration organization has only a minimum staff required for airport management and construction. Major parts of maintenance works such as cutting grass, sweeping of airfield and buildings, utilities, security check services, fuel supply is subcontracted out to the private companies.

The present manning volume of airport administration unit is thus needs reducing.

(2) Prototype of Organization for Airport Administration

Fig. 8.3.2 proposes a schematic diagram of an administration organization that would be necessary to ensure the efficient operation and management of Tashkent and local airports.

Under the Airport General Manager, three departments, namely, Administration Department, Technical Department, and Operation Department are set up. Administration Department will engage in management for personnel, accounting/statistic, juridical and contract public relations/information and procurement/sales.

Technical Department will conduct planning, construction and maintenance of airport facilities including airfield facilities, buildings, electric/mechanical equipment and utilities, as well as environment protection.

Operation Department will carry out the services related to apron use management, rescue and fire fighting services, passenger/cargo terminal and fuel supply.

(3) Manning Adjustment for Tashkent Airport

As Tashkent Airport Enterprise is intended to operate under the self-supporting account system, it is important to reduce expenditures necessary to airport management and operation. Therefore, number of staff is needed to adjust the number of staff to the minimum level required for airport operation and maintenance.

Table 8.3.3 shows the proposed manning plan for administration of the Tashkent Airport. The proposed manning was planned, taking into account the number of staff for the administration organization of airports in Japan.

Present organization of TAE has personnel, who don't directly engage in the services related to airport operation. Furthermore, TAE is providing the services for passenger check-in/handling, and baggage handling, which are normally considered as airline jobs.

If TAE and air carrier sector of NAC (Uzbeksitan Airways) will be separated clearly, institutionally, and financially, personnel who presently engages the airline-hood services should be excluded from the TAE organization. In addition, personnel in charge of the non-airport services such as hotels, kindergartens, and culture-recreation complex, should be excluded from the TAE organization, and form part of another operation unit.

(4) Manning Adjustment for Local Airports

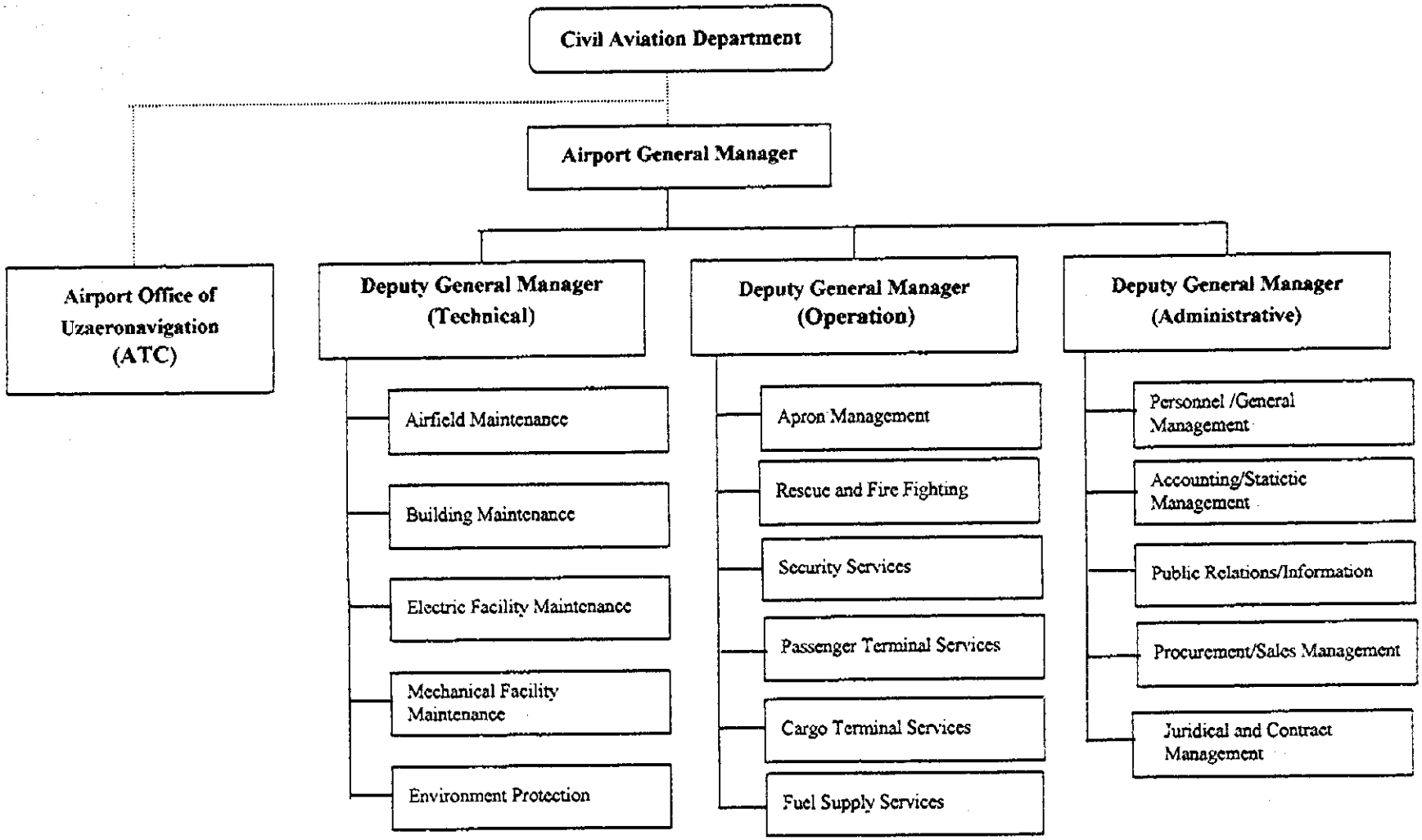
Even if the administration units for the local airports continue to belong to NAC, or to the new civil aviation administration organization to be newly established, adjustment of airport staff will be required so as to decrease the burden to NAC, or the new civil administration organization.

Table 8.3.3 presents the recommended manning plan of the local airport administration. As same as the problem of Tashkent airport, staff engaging in airline-hood work at the local airports should be excluded from the airport organization.

Table 8.3.3 Indicative Manning of Airport Organization

Positions	Tashkent		Local Airports	
	Present	Plan	Present	Plan
Airport General Manager	1	1	1	1
[Administrative]				
Deputy General Manager	1	1		1
Personnel/General Management	203	49		10
Accounting/Statistic Management	64	36		6
Juridical & Contract Management	13	13		3
Public Relations/Information	48	26		5
Procurement/Sales Management	14	14		5
Subtotal	**343**	**139**	**30**	**30**
[Operation]				
Deputy General Manager	2	1		1
Apron Management	555	16		4
Rescue and Fire Fighting	429	66		36
Security Services	0*	66		10
Passenger Terminal Services	72	36		6
Cargo Terminal Services	14	36		3
Fuel Supply Services	121	129		15
Others	87	0		0
Subtotal	**1,280**	**360**	**118**	**75**
[Technical]				
Deputy General Manager	2	1		1
Airfield Maintenance	55	48		9
Building Maintenance	128	128		9
Electric Facility Maintenance	110	81		5
Mechanical Facility Maintenance	82	111		5
Environment Protection	5	8		5
Subtotal	**382**	**410**	**36**	**34**
Subtotal of Airport Staff	**2,006**	**910**	**185**	**140**
Airline-hood Services	**565**	-	**53**	
Non-Airport Services	**545**	-	-	-
Total	**3,116**	**910**	**238**	**140**

Fig. 8. 3.2 Prototype of Future Airport Organization



8.3.4 Improvement of Passenger Comfort

In general, quality of passenger facilities and attendance performance of airport and airline staff, and personnel of immigration and customs inspection make passengers at airports feel comfortable. At present, from the viewpoint of passenger comfort, quality of passenger facilitates and attitude of attendant staff to passengers in Uzbekistan is far from the international practice. Therefore, it is recommended to upgrade quality level of facilities, and to promote improvement of attendance performance as soon as possible.

(1) Quality Level of Facilities

It will not be so easy to upgrade the quality level of facilities at airports to the international level, due to the necessity of huge investment funds. In order to improve quality level of airport facilities, the following points should be taken into account at both the stages of planning of facilities and maintenance:

- Sufficient lighting and brightness of inside passenger terminal building;
- Sufficient English guidance of facility and direction indication;
- Public address system and information counter in English;
- Appropriate air-conditioning in passenger terminal building;
- Efficient communication system;
- Relaxation facilities for passenger such as restaurant, duty free shops, clean rest room.

(2) Attendance Performance

Normally, personnel groups dealing directly with passengers at airports will convey an impression of passenger comfort. Those groups are the staff at check-in counters, passport control, and customs inspection. It is recommended for the airport administration unit to coordinate those groups to improve attendance performance to passengers considering the following items:

- Infiltration of a passenger-oriented attitude in employees;
- Quick, efficient and simplified inspection at each checking point;
- Training of English;
- Procedures that are easy to understand.

8.3.5 Improvement Plan of Financial Operation Practice

(1) Accounting System

a) Present Situation

Tashkent Airport Enterprise (TAE) has its own accounting system as a state enterprise and NAC subsidiaries. Accounting of TAE is based on the "Budget Planning Principle". Annual budgeting and expenditure sheet is prepared based on past values and the expected increase of traffic demand by TAE and approved by NAC. The statement of operation results is documented and reported to NAC on a specific formatted sheet. Documentation of accounting is mainly made by hand, without computer aid. Accounting system and structure of the statement revenues and expenditures employed by TAE differs from western practice.

Table 8.3.4 presents the results of revenues and expenditures of TAE in 1996. Total revenues of TAE account for 10 % of NAC as a whole, and 5 % for expenditures of NAC.

"Commercial Passenger & Cargo Handling" and "Aircraft Departure" are revenues from providing passenger, cargo and mail handling services, and aircraft ground services to foreign airlines. Normally, these kinds of services are the responsibility of airlines or outsourcing of airlines in western practice. Personnel cost of TAE is 49 % of the total expenditures by TAE, and 15 % of the personnel cost by NAC as a whole. Personnel costs include salary of groups, which are not directly associated with airport business (resorts, kindergarten, culture club).

Table 8.3.4 Revenues and Expenditure of TAE in 1996

Revenue Items	Amount	%	Expenditure Items	Amount	%
• Passenger & Cargo Handling	189	18	• Personnel Costs	288	49
• Aircraft Departure	303	29	• Materials Costs	173	29
• (%) of Passenger & Cargo	20	2	• Maintenance Costs	109	19
• Other Revenues	551	51	• Depreciation	20	3
Total	**1,063**	**100**	**Total**	590	100

b) Recommendation

To improve the accounting system of TAE, it is recommended to take the following measures:

- ***To adjust the system to the international accounting practice so as to facilitate financial control;***
- ***To clearly separate TAE's accounting of from that of NAC as a whole;***
- ***To incorporate a computerized system at reasonable investment cost.***

(2) Landing Charges

In general, the landing fee is a principal revenue source for the airport operator and owner. Current landing charge of NAC is calculated at the rate of US$13/ton of aircraft's maximum take-off weight for foreign airlines. Comparative table of landing fee of major airports in the world is shown in **Table 8.3.5**.

Table 8.3.5 Landing Charge of Major Airports in the World

Countries	Airport	Unit Rate/ton (US$)	B-747-400 (395 ton: US$)	DC-10-40 (252 ton: US$)
Uzbekistan	Tashkent	13.0	5,135	3,276
Japan	New Tokyo International (Narita)	18.6	7,349	4,688
	Tokyo International (Haneda)	14.2	5,562	3,640
	Kansai International	17.8	7,043	4,493
USA	J.F. Kennedy	5.0	1,965	1,254
	San Francisco	0.95	359	257
	Los Angels	2.5	954	682
France	Paris Charles de Gaulle	7.9	3,184	1,958
UK	London Hearthrow	1.6	502	502
Netherlands	Amsterdam	9.4	3,696	2,377
Thai	Bangkok	3.5	1,376	878
Philippines	Manila	3.7	1,477	928
Indonesia	Jakarta	4.4	1,753	1,089

(*) Landing charges as of 1996 are approximately estimated value based on the weight

Airport operators in western countries generally set on landing fee, considering financial

balance of the airport account. However, competitive price level is also another importunate factors.

- ***If Tashkent Airport is expected to be a hub airport in the CIS region, its price should be set at a competitive level, taking the landing fees of airports in the neighboring countries into consideration.***

Presently, Uzbekistan Airways does not pay landing fees to airports in Uzbekistan. However, if separation of airline and airport services is implemented,

- ***Uzbekistan Airways should pay landing fee to Tashkent Airport Enterprise as well as to the local airport operators.***

(3) Charge of Air Navigation Use

Detailed information related to charge of Air Navigation Use was not available. According to verbal explanations of NAC, US$3.5 out of the landing charges is allocated as a charge of Air Navigation Use by NAC.

AIP (Aeronautical Information Publication) of Uzbekistan stipulates Air Navigation Services Charges for use of air navigation facilities within the Uzbekistan airspace. The Charges are billed based on the flight distance along the air route in Uzbekistan, and generally called an overflying charge. As overflying charge are currently repealed in the most of western countries,

- ***Its price level should be determined so as not to discourage foreign airlines from flying over Uzbekistan airspace.***

(4) Passenger Airport Charge (PAC)

Passenger Airport Charge (PAC) is also a principal revenue source for airport operator. **Table 8.3.6** shows revenues of New Tokyo International Airport (NIAA). NIAA is owned and managed by an airport authority under self-supporting account system. Passenger airport charge of NIAA is 15% of the total revenue.

According to AIP of Uzbekistan, the charge is US$10 for each passenger departing from Uzbekistan to a foreign destination. Currently, PAC is not directly collected at Tashkent Airport, and is supposed to be included in the air ticket.

Table 8.3.6 Revenues of New Tokyo International Airport Authority (1995)

Revenue Items	Amount (Million US$)	%
Landing Charges	505	38
Passenger Airport Charge	204	15
Charge of Fueling Facility Use	229	18
Concession fee	384	29
Total	**1,322**	**100**

- ***It is recommended that PAC should be collected directly at Tashkent Airport and other local airports. PAC should be collected from domestic and CIS routes passengers.***

PAC of the major airports in the world is shown in **Table 8.3.7**. Charge level for domestic and CIS routes should be lower than that of international passenger.

Table 8.3.7 Passenger Airport Charge of Major Airports in the World

Countries	Airport	Passenger Airport Charge (US$)
Uzbekistan	Tashkent	10
Japan	New Tokyo International (Narita)	16
	Kansai International	21
Australia	Sydney	19
USA	Chicago	3
	Los Angels	3
France	Paris Charles de Gaulle	9
Netherlands	Amsterdam	9
UK	London Hearthrow	13
Korea	Seoul	9
Thai	Bangkok	7
Philippines	Manila	12
Indonesia	Jakarta	5

(5) Car Park Charge

Car Park Charge is currently collected at Tashkent Airport and local airports. Car Park Charge is one of the useful revenues for airport operators in the western countries.

- ***It is recommended that introduction of Car Park Charge should be considered as an airport revenue.***

There is another example that operation and management of car park is being made by a third party, which is founded for the purpose of car park services.

(6) Concession Fee

Concession fee is also a major revenue item for airport operators in western countries. Major items of concession fees are check-in counter and office rental for airlines, space rental for restaurants, duty free, kiosks, shops, etc in the passenger terminal building

If the airport operator provides air cargo terminal building, space rental of cargo terminal building is also one of the revenues from concession. Increase of concession may lead to employment opportunities.

- ***It is recommended that airport operators should promote increases in revenue from concessions.***

8.3.6 Proposed Maintenance Plan

(1) Maintenance Plan for Airfield Facilities

a) Present Situation

Under the leadership of the "General Director" and the "NAC Council" being the top administrative body, five "Vice General Directors" on the same level of the hierarchy can be found, directing different organizational units. One of these five Vice General Directors is responsible for maintenance of surface construction and airport. Department of capital construction and maintenance of surface construction is directly under the Vice-General Director. This Department has close relation with the divisions concerned in each airport in charge of aerodrome construction and the maintenance of surface facilities.

At Tashkent airport, there is a Deputy Director who is in charge of Ground facilities.

Chief Engineer and Technical Department with 8 persons are directly reporting to the Deputy Director. Aerodrome Department with 34 persons is also directly under the Deputy Director.

b) Maintenance Plan

Airfield facilities, such as runway, taxiways and apron, are the most important facilities in the airport, and should be maintained properly based on the ICAO practices and recommendations. Recommended practice is, at first, to prepare maintenance manual that include the method and frequency of inspections and communication rules for urgent problems.

c) Frequency of Inspection

Inspection of the airfield facilities should be regular and as frequent as possible. In any event the minimum frequency should be:

- Runway: Four (4) daily inspections:
  Dawn Inspection – A detailed surface inspection covering the full width of all runways should be undertaken.
  Morning Inspection – All runways
  Afternoon Inspection – All runways
  Dusk Inspection – All runways with small repair, if necessary
- Taxiways: Daily Inspections
- Apron: Daily Inspection
- Grass Areas: Inspections should be made as frequently as the adjacent paved area.

d) Method of Inspection

Inspection may require the use of vehicles, but speeds should be kept to as low as practicable. Detailed inspection of paved area surfaces should be made on foot by the airfield maintenance unit. It will be necessary for airport operations to co-ordinate the programme to ensure that inspections are carried out at the correct frequency.

Before commencing any runway inspection, permission must be obtained from air traffic control. On final completion of a runway inspection, the inspection unit should advise air traffic control of the fact and report the state of the runway.

The times and commencement and completion of the inspection must be noted and included in the form of an inspection log.

e) Points of Inspections

Attention during the inspections should be paid to the following points:

- General cleanliness with particular attention to materials which would cause engine ingestion damage. Such materials may include debris from runway maintenance operations or excessive grit remaining, and tire rubber.
- Signs of damage to the pavement surface including cracking and spalling of concrete, condition of joint sealing, cracking and looseness of aggregate in asphalt surfaces or break-up of friction courses. Damage or deterioration that could cause aircraft damage should be reported immediately.
- After rain, flooded area should be identified and marked, if possible, to facilitate

later resurfacing.

- Damage to light fittings including blast damage to approach lights, threshold lights.
- Cleanliness of runway marking;
- Conditions and fit of pit covers

A check should be made of all authorized obstacles for proper lighting and marking. Any unauthorized obstacles should be reported to the designated persons immediately. Where possible, prompt removal of the obstacle should be carried out.

If a dangerous unserviceablility is discovered during a runway inspection, the fact should be reported immediately in order that appropriate ATC action can be taken.

f) Snow Removal

Snow and ice removal programs were generally found to be satisfactory from the observations and discussions during the field survey. However, the equipment for snow and ice removal seems to reach the end of its useful life.

Therefore, it is recommended that the following snow and ice clearing equipment is to be procured for each high priority airport:

- Snow Sweeper: 4 sets
- Snow Plow: 3 sets
- Snow Rotary 2 sets
- Grader 2 sets

(2) Maintenance Plan for Terminal Area Facilities and Utilities

Maintenance works for the terminal building and other buildings includes generally daily cleaning and operation of equipment, and periodical inspections. It is recommended that maintenance plan should be prepared in order to carry out maintenance and operation without inconvenience to the building users.

Maintenance plan should be prepared taking into consideration the following items:

a) Buildings and Equipment to be maintained

Prior to prepare the maintenance plan for buildings and equipment installed in the buildings, it is necessary to grasp the objective buildings for maintenance and equipment, referring to design and completion drawings:

- Location of building, floor area and layout, structure, and type of finishing materials;
- Type of equipment, capacity, and system
- Stock of spare parts, and manufacturer of equipment.

b) Establishment of Regulations for Usage of Buildings

In order to avoid occurrence of unexpected damages and troubles, it is needed to establish the rules for building users and maintenance unit related to the following items;

- Time of open and close of buildings;
- Procedure on entrance to restricted area;

- Operation rules and record logs of air-conditioning, heaters, elevators and other machines;
- Responsible person for each room or zone, and concession area;
- Maintenance works to be done by concessionaire;
- Prohibited activities and usage in the buildings;
- Rules for cleaning and switching of equipment and lights;
- Communication rules in emergency case.

c) Establishment of Inspection Method

Taking into account the national laws and regulations, and maintenance manual of equipment provided by manufacturer, frequency and method of inspection should be established. As materials used for buildings and equipment are normally has durable life, it is necessary to also establish long-term maintenance plans at the same time as budget planning.

d) Budget and Organization for Maintenance

To carry out inspection and maintenance works efficiently, it is recommended to set up suitable organization, taking into account the available budget resources and required manning.

(3) Maintenance Plan for Air Navigation Facilities

a) Present Maintenance Procedure

Air navigation facilities at airports are operated and maintained by Uzaeronavigation staff at respective airports. Present maintenance procedures have the following problems:

- Present maintenance procedure is only periodical inspection, stressing on repair measures after occurrence of trouble of facilities;
- It seems that technical staff consists only just repair technicians, with her technical skills and little experience for preventive maintenance;
- There are no historical record logs for maintenance and repair for each facility;
- Countermeasures against troubles generally take a long time due to the lack of spare parts.

b) Proposed Maintenance Procedure

It is recommended to take measures as shown in **Table 8.3.8** to improve the present maintenance procedures for air navigation facilities:

Table 8.3.8 Proposed Maintenance Plan for Air Navigation Facilities

Items	Proposed Maintenance Plan
1. Introduction of Remote Monitoring and Control System	Presently, each air navigation facility has its own on-site maintenance staff. It is recommended that maintenance procedure should be improved by introducing remote monitoring and control system. The system could reduce a number of maintenance staff.
2. Establishment of Maintenance Center	It is recommended to establish a maintenance center in Uzaeronavigation in order to control, with unified manner, maintenance work and supply of spare parts to each airport with unified manner. Establishment of the center may contribute smooth repair works and double stock of spare parts at each airport.
3. Preparation of Maintenance Manual and Regulations	It is recommended to prepare a maintenance manual and regulations including inspection procedure, frequency, check points, and communication rules in emergency so as to facilitate prompt repair measures.
4. Preparation of Operation and Repair Record Logs	It is recommended to prepare a format for operation and repair record logs in order to help maintenance work on equipment.

c) Manning of Maintenance Staff

Table 8.3.9 shows the present number of maintenance staffs for air navigation and communication facilities and ATC controllers at each airport. It seems that the number of maintenance staff is excessive. It is recommended that the appropriate number of maintenance staff will be 15 staff members (5 persons/shift x 3 shifts = 15 persons).

Table 8.3.9 Number of Maintenance Staffs and ATC Controllers at Airports

Airport	Radar Control	Number of Maintenance Staffs	Number of Controllers
Tashkent	ASR, ARSR	Approx. 100	85
Namangan	ASR	31	31
Andizhan	ASR	14	13
Fergana	-	13	13
Kokand	ASR, ARSR	45	20
Samarkand	ASR, ARSR	Approx. 50	30
Termez	ASR, ARSR	26	17
Karshi	ASR	Approx. 50	14
Bukhara	ASR	Approx. 50	20
Navoi	ARSR	15	12
Urgench	ASR	Approx. 50	20
Nukus	ASR, ARSR	20	20

(4) Maintenance Plan for Air Route Navigation Facilities

a) Present Maintenance Procedures

Air navigation facilities for air routes are located around Tashkent and Samarkand. These facilities are operated and maintained by several technical staff on the sites.

b) Proposed Maintenance Procedure

In order to envisage a reduction in the number of maintenance tasks, and establishment of efficient maintenance performance, it is recommended to provide remote monitoring and control system for future maintenance procedures.

Remote monitoring and control center should be established at Tashkent and Samarkand airports. The center and each air navigation facility should be connected by telephone lines or satellite lines to monitor and control the current conditions of navigation facilities. In case of emergency, notice for inspection should send to the Uzaeronavigation staff at the nearest airport to the facility.

Regarding routine maintenance for the facilities, Uzareonavigation technical staff working at nearest airport should periodically make a maintenance patrol.

8.3.7 Airport Emergency Plan

The organization of the Tashkent airport has a vice-president who takes charge of safe aviation. Combined guard and fire fighting, having more than 400 staff members conducts fire fighting and rescue tasks in emergencies.

On the other hand, a crisis-management group has been set up as an independent organization, and three workers are assigned to it. The chief of this crisis-management group deals with natural disasters such as earthquakes and floods. In addition, for search and rescue operations, six staff members are assigned.

In the event of an aircraft accident the primary consideration is to save lives. In order that this may be accomplished expeditiously, it is necessary to plan the action to be taken in advance and publish orders that clearly denote the various emergency services involved in the rescue.

Therefore, it is necessary, at least, to draw up an emergency plan containing a comprehensive set of procedures detailing the action to be taken for all degrees of aircraft emergencies.

The purpose of an Airport Emergency Plan is to set out procedures to alert the various emergency services, both on and off the airport and in coordination between the rescue service units.

An airport emergency plan should be prepared to indicate the responsibilities to as well as the actions to be taken by agencies that could be of assistance in responding to an emergency, considering the following matters:

- To serve as a guide to internal and external agencies who have a part of play, especially local fire departments, police, ambulance services, hospitals and medical units in the event of an aircraft accident on or near the airport;
- To set out in detail the responsibilities of all the emergency organizations as to their role in response to and participation in an aircraft accident on and off the airport;
- To establish the sequence of arrangement for calling of airport rescue and fire fighting services as well as police, ambulance, hospitals, medical units, and local fire department.
- To establish a fixed emergency operations center in the airport;
- To set out command lines for the emergency services. Normally, the officer-in-charge of the airport rescue and fire fighting service will be the first person in command.

- To predetermine the degree and responsibilities of response for rescue between the airport rescue units and externally based emergency services;
- Two grid maps should be prepared. One, the internal airport maps, should depict all relevant airport details including taxiways, access roads, water supplies, rendezvous points. The second, airport external maps should show in detail the perimeter of the airport, surrounding communities, access roads, bridges, swampy area, etc., up to eight (8) kilometers from the airport.
- To establish method of training and rescue drill, and review the results to allow for improvements to enhance the effectiveness of emergency plan.

8.3.8 Training Plan

(1) Present Situation

a) Education and Training

Generally, engineers, experts and air traffic controllers in NAC are educated at the civil aviation education institutions and colleges in Uzbeksitan and CIS.

Major education institutions in CIS are as follows:

- Pilot: Uryanovsk Aviation Institute and Aktybinsk Flight Institute in Kazahkstan
- Navigator and ATC Controller: Ukraine Aviation University
- Flight Engineer, Radio Engineer: Kiev International Civil Aviation University

In Uzbeksitan, mechanical engineer for aircraft and economist are educated at the Tashkent Civil Aviation Institute established newly after independence. In future, the Institute has a plan to provide education for civil aviation specialists and experts.

At the Tashkent Institute of Communication, radio engineering and communication engineering are provided, and the Tashkent Institute of Roads and Highway is providing the architectural, and road and airport engineering for airport maintenance staff.

Training of air traffic controllers and radio engineers of NAC are carried out at two places, Sergli and Tashkent airport. At Tashkent airport, new ATC controllers receive the 6-month training including the familization of western-made equipment and English training. At Sergli, re-training of ATC controllers are provided for change of working place and grade-up of control services.

b) Composition of NAC Staff

According to information available, composition of NAC staff is as follows:

• Usbeks' Staff:		35.9 % of NAC total
• Female Staff:		34.2 % of NAC total
• Staff by Age:	less than 30 years old	26.8 % of NAC total
	more than 50 years old	15.7 % of NAC total
• Education:	Higher grade graduated	21 % of NAC total
	Medium grade graduated	28.4 % of NAC total
• Class	Management	7.3 % of NAC total
	Engineers	10.3 % of NAC total

Specialists	26.6 % of NAC total
Workers	55.8 % of NAC total

Management staff is normally selected through recommendation basis by a committee and upper management persons. Management staff selected must receive refresher training related to their tasks for every 5-years in order to upgrade his career.

General Director of airports is normally assigned by the order of NAC 's General Director with consent of local governor.

c) Proposed Training Plan

Regardless of their profession, most people have at the time of recruitment the basic knowledge and the qualifications required for their daily work. Taking this into consideration, the training system for the personnel differs from the Air Traffic Controllers.

Air Traffic Controllers are usually trained in training schools under the special circumstances using particular training instruments and a special syllabus for one or two year.

On the other hand, the training for airport staff should be executed on the basis of the job training. However, at least the following program is recommended to keep maintenance skills of airport staff high.

- **Training Course for Recruits**

Two-week training course for recruits shall be provided for fundamental knowledge in general and professional knowledge necessary for their work. The general information and knowledge about the aviation sector shall also be the contents of the curriculum. Persons with great carrier experience in every field of the aviation sector will make good instructors.

- **Advanced Training Course**

This course is for persons who have more than 5-year's experience in the organization. The curriculum should mainly consist of the subject important to their activities and professional techniques required for their profession. The special training for the future management shall also be considered in this course. Instructors from outside the organization may also be required for this advanced training course.

- **Senior Training Course**

This course is for persons who have more than 10 ~ 15 year's experience in the organization. Experts in every field of aviation from developed countries will make good instructors. Their profound experience will help trainees to be some leading persons in their offices. Overseas training shall also be planned and offered to this group of people.

8.4 Modernization of Air Carrier Sector (Uzbeksitan Airways)

8.4.1 Summary Review and Issues for Modernization

The following is a summary review and issues on current management and operation of the air carrier sector (Uzbeksitan Airways).

(1) Management for Air Carrier Sector

Compared with the management styles of western airlines, management of Uzbekistan Airways is not clearly separated in NAC's management as an independent unit for airline business.

Up to present after the independence of Uzbekistan, NAC has been responsible for all matters related to civil air transportation including control and making civil aviation policy, air transport services, operation of airport, providing of air traffic services.

The major western airlines were initially established as national flag carriers with strong government support and protection, and a major part of their stocks was held by government organizations. After increasing their capacity and performance both in operation and the financial aspect, they have been managed and operated as independent bodies or privatized companies.

However, management of Uzbekistan Airways seems to be very uncertain and not systematically established due to the slow introduction of a self-supporting account system and corporate policy.

Although the unit of Uzbekistan Airways is now buried under the overall organization of NAC, its business management process as an airline will be required to be functionally the same as in most western airlines.

(2) Employment Volume

Present personnel level for Uzbekistan Airways is considered to be very high, compared with the present production volume.

It is not possible to identify the number of employees engaged in airline jobs in the organization of NAC. So as to compare employment levels with other airlines, the number of employees of Uzbekistan Airways was estimated as shown below:

Number of Employee of Uzbekistan Airways:

• NAC headquarters:	184 (40 % of total staffs)
• Pilot Complex:	1,633
• Aviation Technical Complex:	2,350
• Ticket Reservation & Sale Complex:	750
• Information, Calculation Center	75 (50% of total staffs)
• Tashkent Airport:	565 (18% of total) staffs of TAE)
• Local Airports	495 (18% of total staffs)
Total	**6,052**

Comparison of ASK per employee of airlines in the world is shown in **Table 8.4.1**. This index represents productivity per employee. At the same of Uzbekistan Airways,

this is 1.21. ASK/Employment of the western airlines is ranging from 2.12 to 5.00, while the indices of airlines in the former USSR are below 2.0 except Transaero.

Table 8.4.1 Comparison of ASK per Employment of World Airlines

Airlines	ASK (10^6 x seat-kilometer)	Number of Employee (*)	ASK/Employee (10^6 x seat-kilometer)
1. Uzbeksitan Airways	7,329	6,052	1.21
2. American Airways	245,662	86,244	2.85
3. Lufthansa	91,998	43,491	2.12
4. Turkish Airlines	16,297	8,509	1.91
5. Japan Airlines	108,503	20,876	5.20
6. All Nippon Airways	72,351	14,473	5.00
7. Japan Air System	20,088	5,612	3.58
8. Aeroflot	22,389	14,838	1.51
9. Transaero	4,750	1,172	4.05
10. Air Ukraine	2,046	3,977	0.52
11. Lithuania	641	1,125	0.57

Note: Number of employee is as of 1994 IATA Statistics

(3) Financial and Accounting System

Only Profit and Loss (P/L) and Balance Sheet (B/S) for all over NAC was available for analysis on financial and accounting system. Basically, present account system of NAC is not clearly separated in accordance with activity of each unit in NAC.

Therefore, as for financial conditions of Uzbekistan Airways, it was difficult to extract financial and accounting data of the Airways from the above P/L and B/S.

The following is a summary of analysis on the above P/L and B/S, based on the information available.

- Revenue and expenditure items used in NAC seem to differ much from western standards.
- For example, "(%) of passenger and cargo revenue" is normally considered as a common expenditure item of an airline. But this item is summed up as a revenue item of NAC, while it does not appear in any report as an expenditure item of the airlines.
- The passenger/cargo handling revenue proportional to their volume seems very unusual. This is the same also for aircraft handling revenue. These revenue items are merely expenditure items for the airline, not proportional to the number of handled passengers.

(4) Air Route Structure and Production

During the field survey, information related to the air route structure of Uzbeksitan Airways was not available. Basic indices showing the airlines' capacity and activity are normally compiled and reported based on the common format of IATA and ICAO. Analysis on the current air route structure was made based on the timetable as of March 1997.

From the analysis of the current air route structure of the Uzbekistan Airways, the following are the most remarkable points of air transport activities.

- A big part of the company's production (ASK) is put into international routes and the Moscow route (82%).
- A big part of the company's production (ASK) is covered by two types of western made aircraft A310 and B767 (63%).
- Many flights are put into domestic routes and exhaust much frequency and block time by using small Russian made aircraft, Yak40 and An24.

It is important to establish efficient analysis methods for air route structure as a part of the Corporate Planning procedures, in accordance with the practices of IATA and ICAO.

(5) Corporate Planning

Procedures of making corporate plans differ from in western airlines.

At first, Uzbeksitan Airways establishes the basic economic plan based on some particular logic. Then, the Airways makes actual route and frequency plans to meet the basic economic plan.

Most western airlines make long- or medium-term plans with a rough route and frequency plan, instead of the basic economic plan. Then, they make the annual detailed plan to realize the first year of long- or medium-term plan.

(6) Sales and Reservation

The sales/reservation division of the Airways did not appear to be very active.

In the era of the former Soviet Union, all planning and management of air transport was made and controlled exclusively by Aeroflot. Previously, a traveler would merely telephone Aeroflot for reservations and get the necessary information. This might have been quite possible without a published timetable, because Aeroflot was a monopolized airline at that time.

Nowadays, Uzbekistan Airways is going to take an active part in the free open market in air transport worldwide. Recently, the Airways has been making various efforts to face the free open market system.

Therefore, it is most essential for Uzbekistan Airways to establish a distribution system of proper timetables on time, especially in the international market.

It is also necessary for the airline to strengthen its market study and sales promotion potential by establishing effective sales channels.

(7) Passenger/Baggage Handling at Airports

Handing of passenger and baggage is to be conducted by staff under the direct command line of the Airways.

Western airlines are of opinion that handling of passenger and baggage is genuine airlines' job and very important for keeping the airline's reputation.

Airline business and operation is a complete set of activities (= provision of services to customers) comprising reservation, sales of ticket, check- in at airports, passenger and baggage handling to/from aircraft, transport work (in-flight services) to the destination, and delivery of baggage at destination airport. Those activities should be provided smooth and comfortable with a customer-oriented attitude.

(8) Safe Operation

Current status of maintenance and operation of aircraft is not considered satisfactory for Safe Operation, even though the training is programmed. Especially, the number of licensed mechanics required for A-310 and B767 by the size of activity is not met.

Regulations of the western-made aircraft are totally configured with reasonable harmony among manufacturing, certification system, maintenance and operation of aircraft, and regulations for airport, air route, and navigation facilities.

It is the most important to recognize that regulation, specific detailed procedures, and personnel qualification requirement should be substantiated for operation of the western-made aircraft.

(9) Aircraft Operational Productivity

Uzbeksitan Airways has more aircraft than required from an analysis of the route structure planning based on the timetable. Current fleet was built up over the years, not by reasonable analysis based on the route structure. Annual flight hours of Russian-made aircraft such as IL-62 and Tu-154 are approximately 800 hours, while that by western-made aircraft is more than 4,000 hours.

Uzbekistan Airways should improve productivity at moderate and steady rate. At the same time, the target is the most effective fleet configuration arrived at on the basis of criteria adopted by western airlines.

(10) Training of Cabin Crew

In emergency situations, the movements of cabin attendants are very important for assuring safe operation. Therefore, training for emergency evacuation with combinations of flight crew and cabin attendants is indispensable.

8.4.2 Proposed Restructuring of Air Carrier Sector

It is difficult to distinguish air carrier sector or unit in the present NAC organization due to coexistence of various type of functions such as aviation policy making, air traffic control, operation of airports and other activities.

As being recommended in the Restructuring Plan of NAC, Uzbeksitan Airways should intend to conduct its operation as a self-supporting airline. To accomplish this target, it is necessary to take the following actions in respect to organization structure:

- ***Uzbekistan Airways should be clearly separated from the governmental administration bodies and airport operation organization;***
- ***The number of staff should then be reasonably adjusted in accordance with the production level of flight operation, and the proposed corporate planning procedure.***

8.4.3 Proposed Improvement Plan for Corporate Planning

(1) Necessity of Corporate Planning

Uzbekistan Airways is strongly expected to grow up and become a leading airline in the central Asia region connecting Asia and Europe closely in the near future to come. However, the Airways seems to have suffered from a shortage of revenue, especially from the local currency drop against US$, the prevailing currency in many other

developing countries all over the world.

The Airways will need definitely US$ to cover the necessary US$ expenditures for the modernization of the Airways. One of the most important things for the Uzbekistan Airways to do, must therefore be to increase revenue in foreign currency as much as possible by securing foreign passengers.

From the results of the air route structure analysis, long or medium range international routes and Moscow route are considered the most probable air routes for increasing revenues in foreign currency.

As the matter of fact shown in **Table 8.4.2**, about 50% of Block Time and Number of Seat, and about 80% of ASK (available seat kilo) are thrown to these routes in 1997 production amounts.

Table 8.4.2 Summary of NAC's Production by Route

Route	Block Time	Number of Seats	ASK (10^6)
International	32 % (25,905 hours)	25 % (750,000 seats)	53 % (3,845)
CIS (Moscow)	18 % (14,304 hours)	23 % (679,000 seats)	30 % (2,151)
(Others)	9 % (7,557 hours)	12 % (347,000 seats)	9 % (660)
Domestic	40% (32,318 hours)	40 % (1,217,000 seats)	8 % (604)
Subtotal of Moscow & International	50 % (39,399 hours)	48 % (1,429,000 seats)	83 % (5,996)
Total	100 % (80,084 hours)	100 % (2,993,000 seats)	100 % (7,261)

It will be very important to select these essential routes and establish their characteristics through route profitability analysis:

- Which routes are supposed to be really essential for the Airways among the many international routes?
- Which routes are really profitable and earn much foreign currency?

Generally, essential routes offer the conditions below:

- Large amount of revenue
- Big demand (number of passenger and cargo volume)
- High yield (unit revenue per RPK)
- Competitive with other airlines
- High potential demand in future
- Strategic importance, etc.

Among these conditions, large revenue (especially in US$) is most important, even in case the route is not profitable from the point of view of cost analysis.

Usually it is very probable to put newly purchased modern aircraft on such routes and sometimes the routes are apt to become in non-profitable due to heavy depreciation costs. However, such routes can sustain and absorb big expenditures and reserve money for future purchase of new aircraft.

Figs. 8.4.1 presents the general cycle of corporate planning for airline business currently

used in common airlines in western countries, and detailed procedure of each planning element is attached in the Appendix.

(2) Selection of Essential Routes and Route Analysis

- ***It is essential to select essential routes for the Airways, applying precise route profitability analysis for these routes, in order to increase revenues.***

Each essential route has to be recognized as a valuable commodity for Uzbeksitan Airways, which has its own demand, own price and own cost, and, what is more, own yield and break-even point.

Of course, the Airways has a similar method or technology, and has been using it for many years. Judging from data provided to the study team, the method presently adopted by the Airways, however, seems to have been constructed under a unique accounting system with different revenue and expenditure items from the ICAO or IATA standards.

(3) Introduction of International Practice in Corporate Planing

- ***In order to develop corporate planning procedures of the Airways, the Airways should better introduce route profitability analysis by rearranging all the revenue and expenditure items and production indices in accordance with the international practice.***

Without a common procedure consistent with international practice, the results of the analysis on corporate planning would not properly be evaluated, and not be compared with due data of other airlines.

Indices such as ASK, ATK, Block Time, Seat Occupancy (load factor) and break even point of the selected essential routes have to be prepared in the planning stage.

(4) Introduction of the Concept of Middle-Size Group for Air Routes

- ***It is also necessary to introduce the concept of the "Middle-Size Group" for air routes in corporate planning.***

"Middle-Size Group" in air routes can be gathered based on geographically similar routes, for example, such as the European Route and South East Asian Route.

Air routes structure analysis in the previous chapter and calculation of productive indices was made based on the same manner.

The Uzbekistan Airways does not seem to have such a concept, and it has only a category of major size route groups, International, CIS and Domestic.

According to the concept of "Middle-Size Group" for air routes, the demand forecast is better done by market segmentation such as foreigner/domestic passenger, business/tourism and individual/group with their respective unit yield, taking into account the following aspects:

- ***What is the demand tendency in the long- and medium-term?***
- ***Which area or zone would have a higher growth rate of passenger demand, Europe or South East Asia?***
- ***How about the level of yield for that region in future?***
- ***Furthermore, it is also necessary to have a long- or medium-term planning of***

western airline's type that contains a rough framework of route and frequency and future aircraft plan. Medium-term planning (3 or 4 years) might be most realistic in present world situation.

The medium-term planning is also considered to be necessary in order to envisage future purchase of new type of aircraft, investment in big facilities, crew training, and development of international affairs. Moreover, it is very meaningful to show the company's will and future directions to all employees with perspective figures.

8.4.4 Improvement of Competitiveness and Customer Satisfaction

All essential routes of the Airways must be competitive. The Airways has to develop a competitive power so as to compete seriously with other airlines to earn much hard currency.

□ ***How to increase the competitive factor? In other words, it is essential for the airline to be seen as attractive by its customers and to offer customer satisfaction with the services it provides.***

Generally, competitive factor consists of safety, punctuality of flight schedule and comfortability, and elements of attractiveness of airline for passengers can refer the following items:

- Cheaper airfare
- Absolute safety
- Modern and new aircraft
- Convenient schedule
- High punctuality
- Quality service performance

(1) Punctuality

Punctuality is often measured by dispatch reliability and presented as flight delay and flight cancel rates. Keeping high punctuality is an important factor to get high-yield business passengers and much more important for keeping the airline's good reputation.

Presently, Uzbeksitan Airways seems to have 85 to 90% dispatch reliability, and it may have higher figure for international routes, but it should improve more to raise its competitive factor with the efforts of each productive division.

(2) Quality Services Performance

Quality service has a broad meaning, but from the viewpoint of the passenger, it can be classified into the following stages alongside passenger's sequential movement:

Step 1	collection of flight information
Step 2	making reservation call
Step 3	buying ticket at ticket office
Step 4	check-in at airport counter
Step 5	boarding and receiving cabin service
Step 6	picking-up checked-baggage at destination airport

A passenger would expect good service at all stages to proceed. Once he has been disappointed at any stage, he would have a bad impression of the airline.

Starting at **Step 1**, if he could not find out a timetable or even telephone number of Uzbekistan Airways, he may call another airline such as Transaero for getting a ticket for the Tashkent-Moscow route.

At **Step 2**, the stage of making reservation call, if he felt something unpleasant in the telephone conversation with airline's reservation staff, he might call other airlines, immediately.

The same could be said for all stages. When he could not find his checked baggage at destination airport, he would probably change the airline for his next tour, especially when he was a business passenger.

- ***As a whole customer satisfaction should be a key concept to the improve competitive factor, and also might be generally a key word for success in most market oriented business.***
- ***In order to recognize the customers' requirements, and reflect actual performance to the customer, it is recommended to conduct customer's requirement surveys using with a written questionnaire.***
- ***It is recommended to analyze the stubs of air tickets to build up a customer database.***

Steps 1 to 3 are all in the sales service field, while **Steps 4 and 6** are in the traffic service field at airports, and **Step 5** in the aircraft cabin services domain.

Improvement of sales service would have the same effect as an improvement of the computer reservation system and sales network and other expensive measures.

(3) Sales Service

Recommended measures to improve sales service are as follows:

- ***Supply timetable and other advertising materials in time as necessary through the sales network;***
- ***Improve quality of reservation and ticketing staff (with a service-minded attitude and professional knowledge);***
- ***Physically modify the main ticketing building to a well-lighted one with a clean, open, friendly atmosphere.***

(4) Check-in and Baggage Handling

- ***To improve check-in and baggage handling service at airport, especially Tashkent, it is firmly recommended to replace the present airport staff with Uzbeksitan Airways staff as discussed in the previous chapter.***

These jobs are supposed to be genuine airline jobs and should be handled by professional staff of airlines who are able to handle passenger's claim and requests, and solve various kinds of troubles through the airline's network of worldwide communications. TAE does not have such equipment and specialists.

As mentioned, the high reliability of checked baggage handling is very important for acquiring high-yield business passengers.

Fig. 8.4.1 General Cycle of Corporate Planning for an Airline

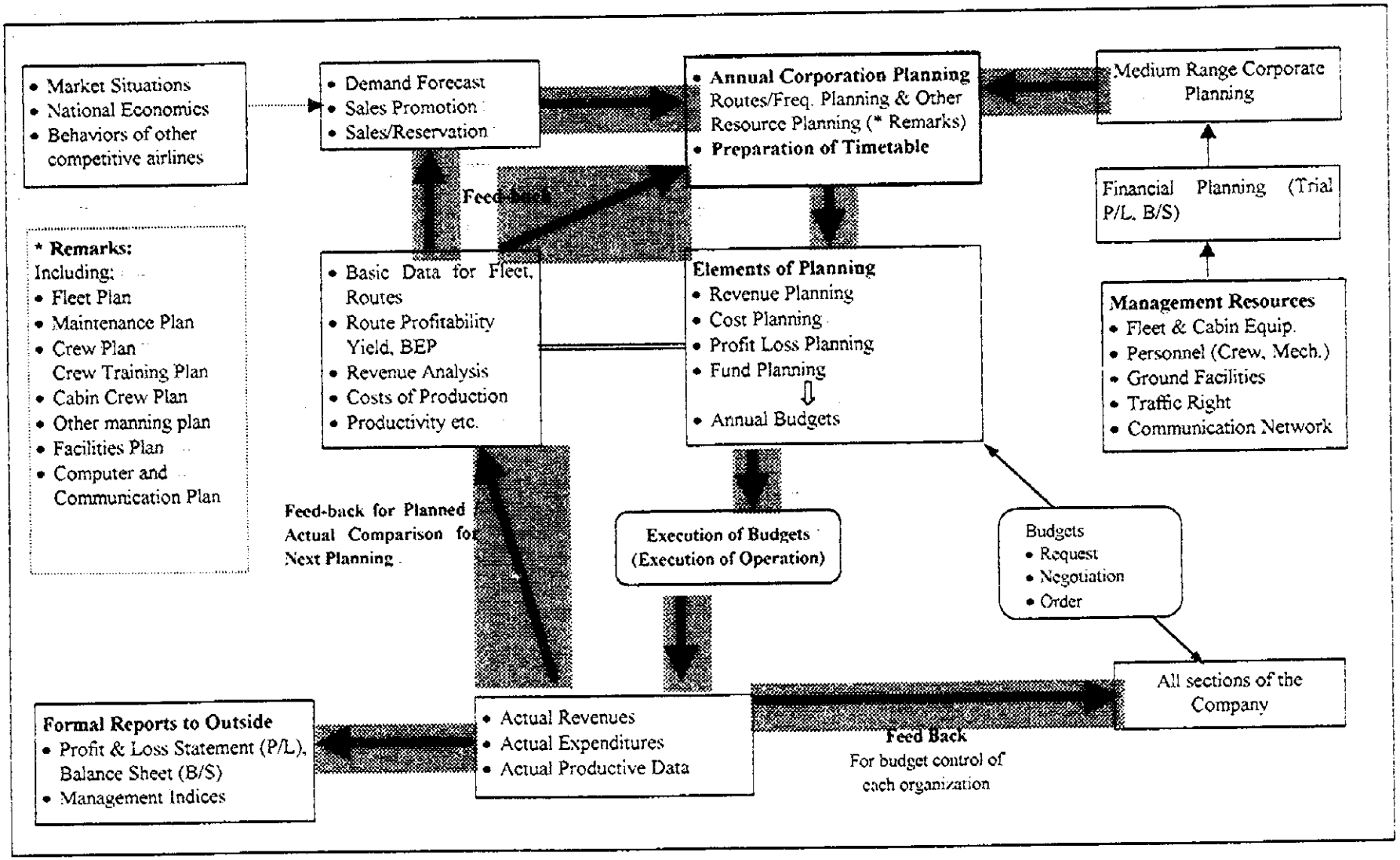
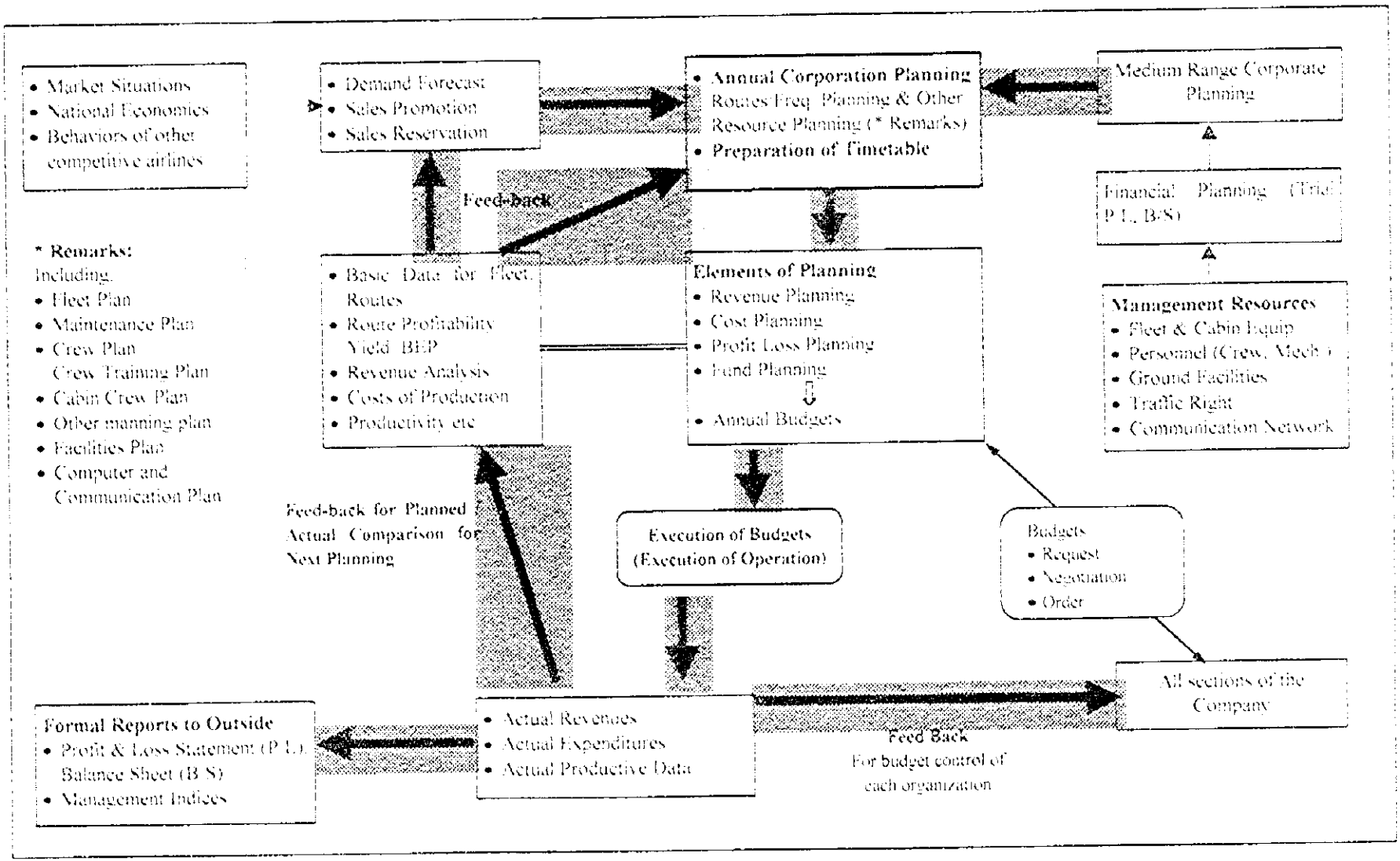


Fig. 8.4.1 General Cycle of Corporate Planning for an Airline



8.4.5 Computerization in Airline Management

(1) Computerization in the World

Initially, computerization in airline business applied to accounting management of airlines and control and management of spare parts stock at aircraft maintenance center.

In 1960s, airlines in USA developed the first-generation Computer Reservation System (CRS) functioning only for reservation seats and management and flight schedules. Major airlines in USA strongly promoted the expansion of their own CRS to travel agencies.

In the 1980s, major airlines successively absorbed CRS of small airlines, and CRS became huge network in USA and Europe. According to promote operational alliance of airlines, grouping of CRS made actively progress.

Major CRS presently being operated in the world are as follows:

• USA	APOLLO	(American Airlines)
	COBIA	(United Airlines)
	WORLDSPAN	(Northwest, TWA)
	SYSTEM ONE	(Continental Airlines)
• Europe	GALILEO	(KLM, Sabena, Alitalia, Swissair)
	AMADEUS	(Air France, Lufthansa, SAS, Iberia)
• Asia	ABACUS	(Cathay, Malaysia Airlines, Singapore Airlines, China Airlines, Philippine Airlines)
	MULTI JAPAN	(Japan Airlines)
	INFINI	(All Nippon Airways, Abacus)
• Others	SITA	(Airlines in Africa, South America, Russia, CIS)

(2) Functions of CRS

Development and progress of CRS have contributed towards work force saving, rationalization of management and office work, speed-up/correctness for reservation and sales for airlines business

Present CRS operating in the world generally has the following functions:

- Display of flight schedules including departure/arrival time, type of seats to be provided, airports of stop
- Display and reservation of seats including remaining seats, reservation of grouped airlines
- Display of airfare and transfer flight schedules
- Reservation and information of hotels, rental cars, theaters and concert, etc.

(3) Computerization of Uzbeksitan Airways

Due to insufficient information, it was not clear that how much of the jobs in NAC have been computerized and what problems are. As for the reservations and departure control system at Tashkent, Uzbeksitan Airways has already been equipped with fundamental functions. These systems should be developed further in future under global computer networks as mentioned above.

However, judging from the general impression given during the field survey, Uzbeksitan Airways seems to need rapid computerization for various jobs in various divisions through-out the company.

The matters to be discussed at the moment are how to develop other systems quickly at low cost and which jobs are to be computerized soon.

The present major airlines in the world have developed their own computerization by constructing huge systems with big machines taking a long time and hung investment. However, with the rapid development of computer and communication technology, many types of smaller, cheaper and high performed office/ personal computers have recently become available.

So far as the construction of computer hardware is concerned, there are many options open to the airlines. There are many kinds of computer application in the field of airlines business.

However, before proceeding further on this matter, the Airways has to adjust its accounting system to international practice. Revenue items, expenditure items and productive indices are always the most important factors for developing various applications.

8.4.6 Training Plan for Air Carrier Sector

- ***To achieve modernization of Uzbeksitan Airways, Uzbekistan Airways has to establish efficient training programs for every field based on the future restructuring plan;***
- ***Especially, to improve English proficiency of staff attending directly passengers and customers, it is essential to set up training programs and put them into practice.***

Such programs should include all classes and categories of staff and employment from newcomers to re-training for management groups. **Table 8.4.3** presents the possible training programme for improvement of airline business performance.

Table 8.4.3 Possible Training Programme

Group of Trainee	Object	Method
Newcomer	To educate for airline's policy and basic professional rules in accordance with specialty of each staff.	Own Training Center On Job Training (OJT)
Management Group	Re-training of management procedure for airline business and corporate planning procedure in accordance with their responsibility.	Participation of Seminar Invitation of lecturer from foreign airlines Foreign assistance for hiring specialists
Corporate Planning Group	To train for corporate planning procedure.	Participation of Seminar Employment of lecturers from foreign airlines
Ground Staffs of Airport	To train required procedures to conduct respective services. Especially, staff attending directly passenger should train for English skills.	Own Training Center Employment of lecturer OJT
Cabin Crew	To educate customer-oriented mind and train required cabin service procedure. Especially, emergency training is necessary.	Own Training Center OJT Employment of foreign Instructor

Table 8.4.3 Possible Training Programme (Cont'ed)

Group of Trainee	Object	Method
Aircraft Operation Planner	To train specialist for aircraft operation planning procedure in order to improve corporate planning.	Training at foreign airlines Employment of foreign instructors
Flight Crew	To train for pilot, co-pilot, and flight engineers in accordance with fleet plan and operation plan. It is also important to train own pilot instructors in Uzbeksitan.	Training at foreign training school and airlines Employment of foreign instructors OJT
Mechanic Group	To train for in accordance with fleet plan and long-term operation plan in order to obtain required certificate for JAR and FAR for western-made aircraft.	Training School OJT Employment of Instructors

8.4.7 Enhancement Plan of Aircraft Operation and Maintenance

Units in NAC responsible for operation and maintenance of aircraft have just encountered with new western-made equipment manufactured based on new concepts, which are unknown to them. They are well experienced and accustomed to both equipment and concept of the USSR.

There are various differences between them. One of new equipment is aircraft manufactured by western manufacturers, such as A-310 and B-767. Introduction of a new model of aircraft generally requires not only very large amount of budget resources, but also a very long preparation-period, even if the airline has already understood the concept. In particular, fulfillment of personnel requirements can be attained and continued by long-time training.

- ***It is recommended, first of all, to commence to study English, because studying English may require a large budget and long time period, prior to beginning with training for subjects such as "how to maintain aircraft and how to operate aircraft".***

At this moment at NAC, the national policy for modernization allows only a very short period and small own budget resources. Under such circumstances, modernization of aviation sector is often no more than a formal reforming of the organization and/or introduction of new hardware.

Terms of "Quality Control" and "Production Planning/Control" have been long outdated, and is the most gigantic problem to be solved as soon as possible.

Approval system for flight crew and mechanic may be observed satisfactorily on a formal basis. In reality, however, support staff and advises from foreign authorities and private firms are still needed due to the insufficient number of the well-trained and competent personnel.

In the course of application for "Foreign Repair Station Certificate" to JAA (Joint Aviation Authority) and FAA, Uzbeksitan Airways has reminded themselves that they have very little of working experience and that they do not have any concrete idea of handling western-made aircraft including business procedures with western authorities.

This also implies that Uzbeksitan Airways has not yet satisfied the requirements for well-trained and competent personnel who can be trained through the real working experience (On the Job Training).

However, Uzbeksitan Airways is currently understanding the concept of western-made aircraft and equipment more than before, and have the desire to have well-trained and

competent personnel who can establish their philosophy for operation of each organization including preparation of manuals and internal rules.

At the same time, Uzbeksitan Airways is approaching the point where it must make a choice between two directions for western-made aircraft. One is to introduce completely the western system, and the other is to keep the current semi-western system.

Uzbeksitan Airways has agreed that western-made aircraft should be operated in accordance with the western system in every field such as maintenance including fulfillment of the very biggest burden of well-trained and competent personnel. However, this can not be satisfied without enough budget resources for continuous training.

- ***To establish "Safe Operation" in Uzbekistan Airways, it is absolutely inevitable to establish the operation and maintenance system in a western manner for western-made aircraft, because "Safe Operation" can be assured only by persons who operate, not by excellent hardware.***
- ***It is strongly recommended to establish an action plan for acquisition of business methods and/or procedures in every field such as flight operation, maintenance, and production planning/control.***

To achieve this target, the best and nearest way is to provide instructors and specialists, who can instruct personnel on an "On the Job Training" basis in the following fields:

- Certificate of maintenance;
- Organization operation for maintenance and flight operation;
- Production Planning and Control for maintenance and flight operation;
- Quality Control for maintenance system;
- Operation Planning of aircraft.
- Training for mechanic and flight crew including training for English

8.5 Recommendations for Modernization of NAC

8.5.1 Recommendations

Present National Air Company (NAC) is too big organization to be able to attend detailed services under one management unit, especially in the area of commercial business operation.

NAC requires considerable modernization in airport facilities and aircraft and a restructuring of its organization in the functional and financial sides of management towards the market-oriented economy.

In functional areas, a clear division between the governmental functions and commercial business in aviation sector in Uzbekistan will be required in order to enhance efficiency of air transportation of the country.

In the financial areas, current financial balance of NAC as a whole is negative due to the increase of cost for the introduction of western-made aircraft and the steep decrease of air traffic demand. Major airport facilities developed during the former USSR era have reached the moment to be rehabilitated substantially. Russian-made aircraft are superannuated, and operating and maintenance cost are not economical compared with western-made aircraft.

NAC is recently implementing its restructuring plan by separating Uzbekistan Airways into

three affiliated companies under management of NAC as a step towards commercialization and modernization.

As a summary of review of organization, management and operation of NAC, the following points are recommended in order to promote modernization of air transportation in NAC ranging from the state civil aviation management to air carrier services.

(1) Restructuring of Organization

- ***It is recommendable for NAC and the Government of Uzbekistan to take first steps toward the revitalization of the aviation sector, by transforming the existing units of NAC into some independent organizations.***
- ***It is recommended that a clear line should be drawn between the services by such governmental administration bodies as the "Department of Civil Aviation" and the services by commercial enterprises.***
- ***It is strongly recommended to take into account the following in the implementation of restructuring:***
  - Centralized control and management system should be improved so as to transfer responsibility and decision making to respective divisions;
  - Deregulation for disclosure system of information should be established according to progress of privatization. No foreign investor and financier can invest without information relating to the financial and management situation;
  - Accounting system should be modernized, incorporating international account practice;
  - Statistic data processing system should be developed.

(2) Improvement of Accounting System

- ***It is recommended that revenue sources should be reformed in accordance with the restructuring plan of NAC organization, taking into account a clear separation of activities between government, airline and airport services.***
- ***Tashkent Airport Enterprise is intended to operate under the self-supporting account system, it is important to reduce expenditures necessary to airport management and operation. Therefore, number of staff needs adjusting to the minimum level required for airport operation and maintenance.***
- ***To improve the accounting system of TAE, it is recommended to take the following measures:***
  - To adjust its system to the international accounting practice so as to facilitate financial control;
  - To clearly separate accounting of TAE from NAC as a whole;
  - To incorporate computerized system at a reasonable investment cost.
  - Disclosure of its statement of account will also be required.
- ***If Tashkent Airport is expected to be a hub airport in the CIS region, landing charge should be set at a competitive level , taking the landing fees of airports in the neighboring countries into consideration***

- *Uzbekistan Airways should pay landing fees to Tashkent Airport Enterprise as well as to the local airport operators.*
- *Air Navigation price level should be determined so as not to discourage foreign airlines from flying over Uzbekistan airspace.*
- *It is recommended that PAC should be collected directly at Tashkent Airport and other local airports. PAC should be collected from domestic and CIS routes passengers.*
- *It is recommended that the introduction of Car Park Charge should be considered as an airport revenue*
- *It is recommended that airport operator should promote an increase in revenue from concessions.*
- *Uzbekistan Airways should be clearly separated from the governmental administration bodies and airport operation organization;*

(3) Level-up of Passenger Comfort

- *To improve passenger comfort at airports, it is recommended to upgrade the quality level of facilities, and to promote improvement of attendance performance as soon as possible.*
  - Sufficient lighting and brightness of passenger terminal building;
  - Sufficient English guidance of facility and direction indications;
  - Public address system and information counter in English;
  - Appropriate air-conditioning in passenger terminal building;
  - Efficient communication system;
  - Relaxation facilities for passenger such as restaurant, duty free shops, clean rest rooms.
- *It is recommended for airport administration unit to coordinate those groups to improve attendance performance to passengers considering the following items:*
  - Passenger-oriented attitude;
  - Quick and efficient reception at each checking point;
  - Training in English;
  - Procedure should be easy to understand.

(4) Corporate Planning for Airline Business

- *In order to develop corporate planning procedure of the Airways, the Airways should better introduce route profitability analysis by rearranging all revenue and expenditure items and production indices in accordance with international practice.*
- *It is vital to select essential routes for the Airways, applying precise route profitability analysis for these routes.*
- *It is also necessary to introduce a concept of "Middle-Size Group" for air routes in corporate planning, taking into account the following aspects:*

- What is the demand tendency for long- and medium-term?
- Which area or zone would have a higher growth ratio of passenger demand, Europe or South East Asia?
- How about the level of yield for that region in the future?
- Furthermore, it is also necessary to have long- or medium-term planning of western airline's type that contains a rough framework of route and frequency and future aircraft plan.

(5) Re-recognition of Passenger-Oriented Attitude

- ***Improvement of attractiveness of the airline to customers and offering customer satisfaction with the airlines services by considering the following items:***
  - Punctuality of flight schedule;
  - Cheaper airfare;
  - Absolute safety;
  - Modern and new aircraft;
  - Convenient schedule;
  - Quality service performance.
- ***As a whole customer satisfaction should be a key concept for improving competitive factor, and might also be generally a key word for success in most of the market oriented business.***
- ***In order to recognize customers' requirements, and feed this back into actual performance to the customers, it is recommended to conduct customer's requirement survey using a written questionnaire.***
- ***It is recommended to analyze the stubs of air tickets to build up a customer database.***

(6) Improvement of Sales Service

- ***Supply timetable and other advertising materials in time as necessary through sales network;***
- ***Improve quality of reservation and ticketing staff (with service-minded attitude and professional knowledge);***
- ***Physically modify the main ticketing building to a well-lighted one with a clean, open, friendly atmosphere.***

(7) Improvement of Check-in and Baggage Handling

- ***To improve check-in and baggage handling service at airport, especially Tashkent, it is firmly recommended to replace the present airport staff with Uzbeksitan Airways staff.***

(8) Training Programme

- ***To realize achievement of modernization of Uzbeksitan Airways, Uzbekistan Airways has to establish efficient training program for every field based on the future restructuring plan;***

- ***Especially, to improve English proficiency of staffs, it is strongly needed to set up training programs and put them into practice.***
- ***It is necessary to develop the existing training center so as to cope with required training purposes.***

(9) Improvement of Aircraft Operation

- ***To establish "Safe Operation" in Uzbekistan Airways, it is absolutely inevitable to establish the operation and maintenance system in the western manner for western-made aircraft, because "Safe Operation" can be assured by only person who operate, not by excellent hardware.***
- ***It is strongly recommended to establish an action plan for the acquisition of business methods and/or procedures in every field such as flight operation, maintenance, and production planning/control.***
- ***To achieve the target for maintaining safe operation, the best and nearest way is to provide efficient training with instructors and specialists consultants, who can instruct personnel on an "On the Job Training" basis in the following fields:***
  - Certificate of maintenance;
  - Organization operation for maintenance and flight operation;
  - Production Planning and Control for maintenance and flight operation;
  - Quality Control for maintenance system;
  - Operation Planning of aircraft.
  - Training for mechanic and flight crew including training in English

8.5.2 Programs for Modernization of NAC

As a result of reviewing the existing organization, management procedures and financial aspects of NAC, it is not easy to propose a proper program or action plan for modernizing institutionally and administratively the present NAC structure.

However, in summarizing, the review of institutional aspects of NAC, there are several points that can be identified as in need of improvement. **Table 8.5.1** is attempted to shows the possible programs for strengthening and modernization of NAC organization and management procedures.

Table 8.5.1 Program for Modernization of NAC

Program	Purpose	Example Procedure
1 : Program for Establishment of Department of Civil Aviation	• To establish of the new Department of Civil Aviation (DCA) • To prepare relevant laws and regulations for the new Department	• Hiring experts or consultants from other countries. • Organizing of Ad-hoc committee for establishment of DCA
2 : Program for Establishment of Corporate Planning Procedure for Airline Management	• To develop a corporate planning procedure as an airlines. • To train NAC's staff in developed corporate planning procedures. (OJT)	• Hiring experts or consultants from other western airlines
3 : Program for Establishment of Aircraft Operation Planning Procedure for Airline	• To establish corporate planning procedure as an airlines. • To train NAC's staff (OJT)	• Hiring experts or consultants from other western airlines
4 : Program for Improvement of Quality Control Method for Aircraft Maintenance	• To introduce the quality control method for Aircraft Maintenance and OJT. • To obtain certificates of JAA and FAA	• Hiring experts or consultants from other western airlines

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