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# THE MARKET FOR AIRLINE AIRCRAFT

## A Study of Process and Performance

*prepared for the*

NATIONAL AERONAUTICS  
AND SPACE ADMINISTRATION

*by*

ARTHUR D. LITTLE, INC.  
AND  
SIMAT, HELLIESEN & EICHNER, INC.

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1976

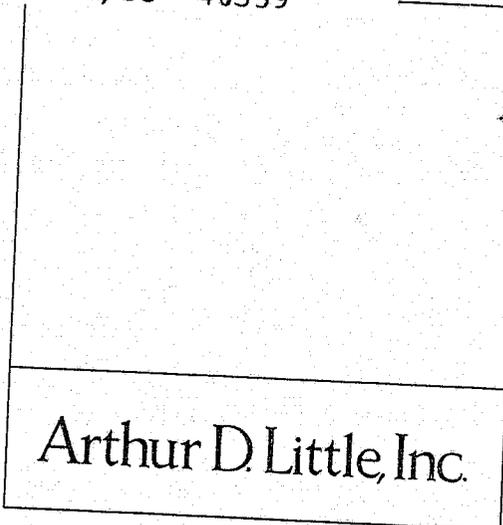
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# I

## EXECUTIVE SUMMARY

The airline equipment process can be viewed from several perspectives. This study focuses on what might be termed the macro-process, that is, an identification and discussion of the key variables accounting for the nature, timing and magnitude of the equipment and re-equipment cycle. The study contains forecasts of aircraft purchases by U.S. trunk airlines over the next 10 years. These are given not to add to the already plentiful list of forecasts but to examine the anatomy of equipment forecasts in a way that serves to illustrate how certain of these variables or determinants of aircraft demand can be considered in specific terms.

Given the complexity of the subject under review, it would have been possible to expend the entire study resources on any single topic covered such as airline profit potential, the meaning and possible impacts of deregulation of the airlines, and the like. The span of coverage versus the depth of coverage presented conflicting demands which had to be resolved by the study team. It is hoped that a reasonable balance was struck.

The most pervasive impression that emerges from an examination of the airline equipment markets and its determinants is that actions by the Federal government -- more than any other single force or combination of forces -- will shape its future size and health. While the government since the infancy of the air carrier industry has always played a large role in its development, its role and influence has continued to expand. For example, the introduction of Federal noise standards for aircraft certification (FAR 36) has been hanging

over the heads of the airlines like the sword of Damocles. In this instance the thread was relief from FAR 36 compliance by older aircraft which account for around 80 percent of the fleet.

As this report goes to printing, a firm policy has been announced by the Administration. All aircraft must comply with FAR 36 within six years. What is not clear is whether this will speed up the purchase of new more fuel efficient, quieter and more productive aircraft or will slow up the re-equipment process as many airlines with limited financing capabilities opt for engine retrofit on existing fleets. Recent statements of the ATA, if truly reflective of industry views, suggest that the airlines would prefer to replace rather than retrofit. Very likely some carriers will decide to retrofit, others to buy new aircraft, and still others to do both. For the industry overall, the mix of retrofit to new orders will be largely determined by whether or not and, if so, to what extent the Federal government decides to help finance the cost of compliance.

The above examples illustrates how deeply the Federal government is involved in shaping the market for airlines equipment and thus the sales of airframe and engine manufacturers which supply the airlines. Government involvement is by no means limited to regulation of air carriers and such matters as airline fare policy, setting maximum rates of financial return and a host of other regulatory areas. It is also involved with the aircraft manufacturers and suppliers who, in addition to their commercial business, are frequently among the top corporations in the defense and space business.

The state of the airlines equipment market is a matter of national concern because the airline and aerospace industry is a major employer of the U.S. workforce and the sale of aircraft and parts heads the list of U.S. exports of

manufactured goods. Its criticality to national defense is undisputed and its health is vital to the economy.

The airline equipment market is now at a critical juncture in its development. The airline industry was brought nearly to its knees over the last few years by a series of blows which have impaired its ability to finance the purchase of additional and replacement aircraft. The first was adding too much capacity with wide body aircraft, then the energy crisis, then a recession and high inflation rates (stagflation). While one can argue that overcapacity was a self-inflicted blow, others argue that it was an inevitable result of economic regulation under prevailing policies of the Civil Aeronautics Board (CAB). The other blows suffered by the industry, however, clearly were not of their own making and are similarly a matter of utmost concern to the entire nation.

Any forecast of the future of this industry (both airlines and manufacturers) necessarily involves making estimates and/or assumptions about future government action. Furthermore, it is equally clear that because industry is so important to the nation the government must be prepared and willing to act if the industry shows signs of faltering. Understanding how the airline re-equipment process works is an essential first step in formulating alternative government strategies to aid it.

Estimates of the airline equipment market among the major U.S. domestic and international certificated air carriers range between \$21 billion and \$47 billion over the next decade. Whether the lower or upper ends of the range are realized is not a matter of mere academic interest. The difference of \$26 billion is a matter of important national interest that means thousands of jobs and may spell the difference between a marginal aviation industry and a healthy

and dynamic industry that contributes substantially to the growth of the U.S. economy. The difference in the high and low estimates is alone over twice the total capital investment committed to launch the U.S. airline industry into the jet age.

A stronger and more active role for the government as a monitor of and catalyst in the airline equipment process is emerging. The process must be reviewed in the light of regulatory changes, the environmental demands promulgated in response to social needs, and the disposition and capability of industry to meet new requirements for technology. In this direction lies the way from promise to fulfillment of the potential of the next decade in the airline equipment market.

CHAPTER II

FORECASTING THE AIRLINE EQUIPMENT MARKET

## CHAPTER II

### A. FORECAST OF AIRLINE CAPITAL REQUIREMENTS - U.S. TRUNKLINES AND PAN AMERICAN

#### 1. Introduction

An in-depth review and forecast of the capital requirements of the U.S. Trunk Airlines (including Pan Am) for the period 1976 through 1984 is instructive as to the forces that both shape and constrain the airline equipment market.

This chapter contains summary data accumulated from analyses of individual airlines (see Appendix) which involved an evaluation of the individual airline's probable course of action in the context of the airline's route structure, competitive status, fleet characteristics, known plans, and financial situation. The judgments made concerning probable equipment programs of the trunkline industry are also based on discussions with airline officials responsible for the disposition and purchase of equipment. Thus the forecasts reflect the views and uncertainties expressed by the industry (and its financiers).

#### 2. Summary

This study of the airlines equipment market forecasts that in the nine years 1976 to 1984 the U.S. trunklines will purchase 744 aircraft at a cost of \$18.5 billion.

Total capital requirements, when ground equipment, debt retirement and dividends are included, will be \$29.6 billion.

Internal cash generation will provide for \$18.3 billion, or 62 percent of the total need. Outside financing of \$11.3 billion will be required; the additional financing can be absorbed without undue strain on the industry, assuming a

reasonable earnings level can be achieved.

The study projections assume that over 500 aircraft not meeting FAR Part 36 noise levels can be remaining in the operating fleet as of December 31, 1984. If these aircraft must be replaced prior to that date, due to an advancement of the timetable for qualification under FAR Part 36, an additional expenditure of \$6.2 billion will be required.

### 3. Traffic Growth

The last reequipment cycle of the U.S. airline industry began in the late 1960's with the introduction of the wide-body aircraft, namely the 747's, DC-10's and L-1011's. Orders for these aircraft had been placed during and following a period of record traffic growth.

Between 1962 and 1968, scheduled traffic of the trunks in the domestic sector grew from 31.8 billion Revenue Passenger Miles (RPM) to 81.6 billion RPM -- an annual rate of 14.4 percent. The international sector of the trunks and Pan American grew at an even faster pace of 14.7 percent annually. In this context, it is not surprising that large aircraft orders were placed, based on highly optimistic traffic forecasts. Introduction of this new capacity soon proved to be an indigestible burden for the industry, however, as the United States and the world economies soon entered a severe recession. Between 1970 and 1975, trunk passenger traffic in the domestic sector grew by only a 4.4 percent annual rate, while the international sector grew by only a 2.4 percent rate.

We believe that the most recent traffic growth experience is not representative of future trends. The industry will return to a more normal growth pattern, perhaps not as high as the late 1960's, but well in excess of recent experience. We are, therefore, projecting Trunk RPM's to increase at an average annual rate of 7.3 percent for the 1976-1984 time

period with the growth rate tapering down over the period (see Table 1).

Some of the air carriers are expected to do better and others worse than the industry, (see Table 2 for industry traffic forecasts). The above-average rate increase for National is caused by its "catch-up operation," an especially vigorous effort to regain traffic after its strike in 1975. This strike benefited Delta and Eastern substantially, and, therefore, their growth rates have been adjusted to project a lower rate of future growth. The only other carrier enjoying traffic growth at rates much better than the industry is Pan Am, reflecting more rapid growth forecast in the international market. (See Appendix for individual carrier forecasts).<sup>1</sup>

Table 2 also shows Available Seat Miles (ASM) and load factor projections for the airlines individually and for the group. Load factors have been projected to rise from the 1975 level of 55 percent to 60 percent range in 1984, reflecting the expectation that the airlines will continue their current trend of cautious expansion and their apparent determination to absorb part of the impact of rising costs in load factor. Of course, the result of this equation is a growth rate for ASM's which is below the RPM rate.

#### 4. Capacity

Today's airline capacity is generally considered excessive by the industry and U.S. regulators; however, planned additions in the next few years are minimal (see Table 3). Aircraft on

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<sup>1</sup>All forecasts were made by Simat, Helliesen and Eichner, Inc. under a subcontract to Arthur D. Little, Inc. (ADL) and do not necessarily reflect the views and opinions of ADL about individual air carriers.

Table 1

U. S. TRUNKS AND PAN AM  
1975 ACTUAL RPM AND  
RPM FORECAST 1976-1984

	Domestic				International				System Total	
	Scheduled		Charter		Scheduled		Charter		Bil.	Change
	Bil.	%	Bil.	%	Bil.	%	Bil.	%		
1975	119.4	1.6	4.73	5.4	31.1	(6.3)	5.42	(18.0)	160	(0.6)
1976	131.3	10.0	4.65	25.0	33.9	9.0	6.40	18.1	176	10.5
1977	139.9	6.6	5.58	20.0	37.0	9.0	7.30	14.1	190	7.7
1978	149.0	6.5	6.42	15.0	40.3	8.9	8.20	12.3	204	7.4
1979	158.7	6.5	7.06	10.0	43.4	7.7	9.20	12.2	218	7.1
1980	169.0	6.5	7.76	10.0	47.0	8.3	10.0	8.7	234	7.0
1981	179.5	6.2	8.54	10.0	50.7	7.9	10.8	8.0	250	6.7
1982	190.3	6.0	9.40	10.0	54.3	7.1	11.7	8.3	266	6.5
1983	201.5	5.9	10.1	8.0	58.1	7.0	12.7	8.5	282	6.3
1984	212.8	5.6	11.0	8.0	62.0	6.7	13.8	8.7	300	6.1

Table 2

## U.S. TRUNKS AND PAN AM TRAFFIC AND CAPACITY (SYSTEM-ALL SERVICES)

1975 Actual &amp; 1984 Projected

Carrier (1)	1975 Actual <sup>1</sup>			1984 Projected					Load Factor Increase (Points) (10)
	(in billions)		Load Factor (4)	(in billions)		Load Factor (7)	Growth Rates Compounded		
	RPM's (2)	ASM's (3)		RPM's (5)	ASM's (6)		RPM's (8)	ASM's (9)	
AA	22.1	38.1	58.0%	41.7	66.6	62.5%	7.3%	6.4%	4.5
BN	6.6	13.2	50.1	12.3	21.6	57.0	7.1	5.6	6.9
CO	6.4	11.9	53.9	11.2	18.7	60.0	6.4	5.2	6.1
DL	16.5	29.6	55.7	29.2	47.9	61.0	6.5	5.5	5.3
EA	18.3	32.5	56.3	32.3	53.8	60.0	6.5	5.8	3.7
NA	3.9	7.5	51.5	8.9	16.3	55.0	9.7	9.0	3.5
NW	10.0	21.5	46.4	18.6	35.0	53.0	7.2	5.6	6.6
TW	22.5	41.0	54.9	42.8	70.1	61.0	7.4	6.1	6.1
UA	28.2	48.7	57.9	53.9	86.2	62.5	7.5	6.5	4.6
WA	7.1	11.7	60.7	12.7	20.3	62.5	6.7	6.3	1.8
PA	<u>18.2</u>	<u>34.9</u>	<u>52.2</u>	<u>36.9</u>	<u>61.6</u>	<u>60.0</u>	<u>8.2</u>	<u>6.5</u>	<u>7.8</u>
Total	159.8	290.6	55.0	300.5	498.1	60.3	7.3	6.2	5.3

<sup>1</sup>CAB Form 31, Schedule T-1.

Table 3

U.S. TRUNKS AND PAN AM AIRCRAFT  
IN SERVICE AS OF DECEMBER 31, 1975  
AND ON ORDER AS OF OCTOBER 20, 1976  
(Passenger and Cargo Aircraft)

Aircraft (1)	Number of Aircraft in Service (2)	Aircraft On Order <sup>1</sup> for Delivery in			
		1976 (3)	1977 (4)	1978 (5)	Beyond 1978 (6)
747	95	6	1	-	-
707-320 B/C	179	-	-	-	-
707-120 B	89	-	-	-	-
707-320	10	-	-	-	-
720 B	23	-	-	-	-
727-200	379	38	45	32	14
727-100	380	2	-	-	-
737	84	-	-	-	-
DC-10	121	1	-	-	-
DC-8-61/62	59	-	3	-	-
DC-8-20/50	85	-	-	-	-
DC-9-50	-	-	9	-	-
DC-9-30	134	-	-	-	-
DC-9-10	27	-	-	-	-
L-1011	78	7 <sup>1</sup>	3	6	5
L-188	15	-	-	-	-
Total	1,758	54	61	38	19

<sup>1</sup>Two sold to Saudi Arabia by TWA in 1976.

SOURCE: CAB. Form 41, Schedules B-2 and B-43.

order for delivery during the 1976-78 period represent less than 9 percent of current capacity, but probable retirements will nearly eliminate any net gain in capacity over the three-year period.

It is evident that in the next few years the airlines are planning to increase productivity (1) by increasing the number of seats on individual aircraft, (2) by boosting average daily utilization hours, and (3) by increasing load factors. It is also evident that the industry contemplates various measures to extend the service lives of their existing fleets. These measures will sustain the industry through 1978, but new orders will have to be placed for 1979 delivery to absorb traffic increases from that year forward.

#### 5. Retirements

Another reason industry is about to enter a major equipment replacement cycle derives from the significant number of aircraft acquired in the early 1960's which are approaching economic obsolescence. The normal attrition rate attributable to the aging of aircraft may be accelerated in this cycle by the operating diseconomies caused by the tripling of jet fuel prices. Furthermore, prospective government imposition of noise standards will be likely to require replacement of JT3D-power aircraft (i.e., Boeing 707's and McDonnell-Douglas DC-8's), and possibly will require the retrofit or replacement of older JT8D engines powering 727, 737, and DC-9 aircraft over the next six- to ten-year period. Also, many aircraft under leases which expire during the period will be candidates for retirement, as airlines may be unable or unwilling to assume the financial burden of ownership after lease termination.

Table 4 contains a summary of the average age of the fleet by age group as of year-end 1975. Few aircraft are prime candidates to be retired in the next two to three years, but by the early 1980's over half of the present fleet will be in the age range when retirement is a high probability. The breakdown by carrier and aircraft types gives a definitive picture (see Table 4a). Eastern still carries 15 Electras (average age of 16.8 years); these aircraft will be retired in the near future. Trans World has ten 707-320's in its fleet which are an average 15.5 years old; and there are old DC8 fleets held by Braniff (13.5 years), United (13.2 years), and Delta (12.5 years).

Table 4

AIRCRAFT AGE BY AGE GROUP  
AS OF DECEMBER 31, 1975

<u>Years in Service</u>	<u>Number of Aircraft</u>	<u>Group Percent</u>	<u>Cumulative Percent</u>
16+	15	1	1
13-15	74	4	5
10-12	217	12	17
7-9	832	47	64
4-6	291	17	81
1-3	329	19	100

Because of the advanced age of this equipment, retrofits to new noise regulations would be uneconomical, even if the implementation of these long-delayed requirements were to become effective immediately; therefore, replacement, rather than retrofit, is the probable course of action. Additional candidates for replacement will be the 720B's, DC9-10's and 30's, 727-100's and most likely some or all of the 707 fleets. These aircraft not only fail to meet FAR Part 36 standards, but their fuel consumption on an ASM basis is relatively uneconomical.

Table 4a

U.S. TRUNKS AND PAN AM AVERAGE AGE OF FLEET  
AS OF DECEMBER 31, 1975

(Passenger and Cargo Aircraft)

<u>Carrier</u> (1)	<u>Aircraft Type</u> (2)	<u>No. of Aircraft</u> (3)	<u>Average Age</u> (4)	<u>Carrier</u> (1)	<u>Aircraft Type</u> (2)	<u>No. of Aircraft</u> (3)	<u>Average Age</u> (4)	
AA	727-100	58	9.9	NW	727-100	32	9.7	
	727-200	48	6.3		727-200	31	5.0	
	707-100B	49	11.8		707-300B/C	10	7.5	
	707-300B/C	41	8.0		747	18	4.3	
	747	11	5.0		DC-10-40	22	2.2	
	DC-10-10	25	3.6					
	Total	232	8.3		Total	113	6.3	
BN	727-100/QC	29	8.4	TW	727-100	35	9.9	
	727-200	40	2.6		727-200	39	6.1	
	747	1	5.0		707-100B	40	11.0	
	DC-8-50	4	13.5		707-300	10	15.5	
	DC-8-62	7	7.6		707-300B/C	50	9.2	
					747	10	5.4	
	Total	81	5.7		DC-9-10	18	9.1	
					L-1011	30	2.0	
					Total	232	8.3	
CO	727-100	2	8.5	UA	737	59	7.0	
	727-200	36	4.4		727-100	122	9.8	
	720B	5	11.5		727-200	28	7.1	
	DC-10-10	16	2.3		747	18	4.4	
	Total	59	4.6		DC-8-20/50	60	13.2	
					DC-8-61/62	39	7.3	
DL	727-100	5	9.6		DC-10-10	37	2.6	
	727-200	69	2.6		Total	363	8.4	
	747	3	4.5	WA	737	25	7.1	
	DC-9-30	62	7.0		727-200	21	3.2	
	DC-8-50	21	12.5		720B	18	11.1	
	DC-8-61	13	7.3		707-300C	5	7.4	
	L-1011	18	1.5		DC-10-10	6	2.4	
	Total	191	5.6			Total	75	6.6
					PA	727-100	13	9.0
EA	727-100	71	10.0	707-300B/C		73	9.2	
	727-200	42	4.5	747		32	5.3	
	DC-9-10	9	8.6			Total	118	8.1
	DC-9-30	72	7.8					
L-188	15	16.8						
L-1011	30	2.3						
	Total	239	7.8					
NA	727-100	13	10.5					
	727-200	25	7.8					
	747	2	5.3					
	DC-10-10/30	15	2.6					
	Total	55	6.9					

Source: CAB. Form 41.

A further replacement need is indicated by the expiration of aircraft leases. While some of the carriers will purchase aircraft coming off lease from lessors, others will prefer to buy new equipment rather than purchase obsolete aircraft -- especially those not qualifying under FAR Part 36. As is shown in Table 5, 228 aircraft, representing 13 percent of the fleet, have leases expiring between 1976 and 1984. These lease expirations will affect some carriers more severely than others, as is indicated by the variance in percent of fleet leased. Since the majority of all aircraft coming off lease do not meet requirements under FAR Part 36, it is reasonable to assume that most of those aircraft will not be purchased by airlines. Table 6 details the lease situation by aircraft type and year and portrays the picture that the heavy concentration is in the 1980's and is for aircraft which do not meet FAR Part 36 noise standards.

We project retirement of 585 aircraft during the period 1976-1984 out of a fleet of 1,758 operating in 12/31/75 (see Table 7). This represents a retirement of 27.2 percent of the trunklines' ASM capacity. This retirement schedule is reflected in our final estimates of aircraft purchase requirements.

Projected aircraft retirements by carrier are shown on Table 8. These projections are in the midrange of the rather wide band of possibilities. A lower rate of retirement for many airlines could result from continued poor earnings performance; on the other hand, the rate will nearly double if federal regulation requires all aircraft to meet FAR Part 36 noise levels by the end of 1984.

It should be noted that the equipment retirements projected in Table 7 leave 503 aircraft in the operating fleet on 12/31/84 which do not meet the requirements of FAR Part 36 (all 747's, DC-10's, L-1011's, DC-9-50's and 727-200's are assumed to meet Part 36 requirements either through delivery in qualified condition or retrofit). Should governmental

Table 5

U.S. TRUNKS AND PAN AM LEASED AIRCRAFT  
(Passenger and Cargo Aircraft)

<u>Carrier</u> (1)	Total Operating Fleet as of <u>12/31/75</u> (2)	Aircraft Off Lease by 12/31/84	
		<u>Number</u> (3)	<u>Percent of Fleet</u> (4)
American	232	27	11.6%
Braniff	81	18	22.2
Continental	59	-	-
Delta	191	18	9.4
Eastern	239	39	16.3
National	55	-	-
Northwest	113	-	-
Trans World	232	37	25.8
United	363	75	20.7
Western	75	6	8.0
Pan Am	<u>118</u>	<u>8</u>	6.9
Total	1,758	228	13.0

Source: CAB. Form 41.

Table 6

U.S. TRUNKS AND PAN AM NUMBER OF LEASED AIRCRAFT  
IN FLEET AS OF 12/31/75, WITH LEASES EXPIRING BEFORE 1985

<u>Carrier</u> (1)	<u>Expiration</u> <u>Year</u> (2)	<u>Type of</u> <u>Aircraft</u> (3)	<u>Number of</u> <u>Aircraft</u> (4)	<u>Purchase Option</u> (5)
American <sup>1/</sup>	1979	707-120B	3	Yes
	1980	727-100	1	No
	1982	727-200	1	Yes
	1983	707-300C	10	Yes
	1984	707-200	2	Yes
	1984	707-300B	10	Yes
	Total		27	
Braniff	1979	DC8-62	5	Yes
	1981	727-100	1	No
	1981	DC8-62	2	Yes
	1982	727-100	5	4 No 1 Yes
	1982	727-200	2	Yes
	1984	727-200	3	Yes
	Total		18	
Delta	1978 <sup>2/</sup>	727-100	2	Yes
	1979 <sup>2/</sup>	727-100	3	Yes
	1980 <sup>2/</sup>	727-200	5	Yes
	1981 <sup>2/</sup>	727-200	1	Yes
	1982	727-200	7	Yes
	Total		18	
Eastern <sup>3/</sup>	1976	DC9-10	9	No
	1978	DC9-30	2	No
	1981	DC9-30	4	Yes
	1983	DC9-30	21	20 Yes 1 No
	1983	727-100	3	Yes
	Total		39	
Trans World	1983	727-100	2	Yes
	1983	727-200	13	Yes
	1983	707-100B	2	Yes
	1983	707-300B/C	6	Yes
	1984	727-200	9	Yes
	1984	707-300B	5	Yes
	Total		37	
United	1976 <sup>4/</sup>	DC8-50	6	Yes
	1978	727-100	23	No
	1980	727-100	2	No
	1981	727-100	26	No
	1982	727-100	4	No
	1983	DC8-61	1	No
	1984	DC8-61	5	Yes
	1984	DC8-62	5	Yes
	1984	727-200	3	Yes
	Total		75	
Western	1984	727-200	6	No
Pan Am	1976	707-300C	2	No
	1983	707-300B	5	No
	1984	707-300B	1	No
	Total		8	

1/ Does not include 1 DC8-60 nonoperating.

2/ Delta has bought the company which leased these aircraft to carrier.

3/ Does not include 5 DC8-61's subleased and 2 L-1011's on seasonal lease.

4/ Purchased from lessor.

Sources: CAB, Form 41, Schedule B-14; Company Reports.

Table 7  
 U.S. TRUNKS AND PAN AM  
 PROJECTED AIRCRAFT RETIREMENTS 1976-1984\*  
 (Passenger Aircraft Only)

<u>Carrier</u>	<u>Number of Aircraft</u>	<u>Percent of 1975 ASM's Generated</u>
Braniff	40	43.2%
Delta	92	41.0
Western	36	40.7
Pan Am	65	36.8
American	70	29.2
National	21	28.7
Continental	20	25.5
Northwest	60	24.5
Eastern	68	21.6
United	77	16.9
Trans World	<u>36</u>	<u>15.2</u>
Total	585	27.2%

\*Includes Aircraft Sales and Lease Expirations.

Table 8

U.S. TRUNKS AND PAN AM  
 PROJECTED AIRCRAFT RETIREMENTS 1976-1984  
 (Passenger Aircraft Only)

Carrier	Aircraft Type	Number of Aircraft	Percent of 1975 ASM's Generated	Carrier	Aircraft Type	Number of Aircraft	Percent of 1975 ASM's Generated
AA	727-100	21	5.5%	NW	727-100	32	10.7%
	707-120B	49	23.7		727-200	18	9.1
	Total	70	29.2%		707-300B/C	10	4.7
			Total		60	24.5%	
BN	727-100/QC	32	29.1%	TW	727QC	2	0.5%
	DC8-51	4	4.8		707-120B	15	5.8
	DC8-62	4	9.3		707-320	10	4.2
	Total	40	43.2%		707-320B/C	9	4.7
CO	720B	5	5.3%	Total	36	15.2%	
	727-200	15	20.2	UA	737	2	0.2%
	Total	20	25.5%		727-100	30	5.3
DL	727-100	5	2.1%		DC8-20	29	7.3
	747	3	2.6		DC8-50	16	4.1
	DC9-30	50	15.6	Total	77	16.9%	
	DC8-51	21	10.3	WA	737	13	9.8%
	DC8-61	13	10.4		720B	18	23.1
Total	92	41.0%	707-300C		5	7.8	
			Total		36	40.7%	
EA	727-100/QC	39	16.3%	PA	707-300B/C	65	36.8%
	DC9-10	9	2.0		Total	65	36.8%
	DC9-30	3	0.9				
	L-188	15	0.7				
	L-1011	2	1.7				
Total	68	21.6%					
NA	727-100	13	12.6%				
	727-200	6	8.1				
	747	2	8.0				
	Total	21	28.7%				

action be taken such that all aircraft must meet Part 36 requirements by 1984, additional new aircraft purchases of 203 aircraft would have to be made at a cost of \$6.2 billion to replace the capacity lost (see Table 9).

## 6. Aircraft Productivity

Translation of an airline traffic forecast into aircraft fleet requirements necessitates assumptions with respect to the elements of aircraft productivity, namely, seats per airplane, average block speed, block hours flown per day, and load factor. In this study different productivity factors were applied to each airline depending upon the characteristics of the individual airline. In general, the assumptions are derived from our knowledge that many airlines are now planning to take actions which will increase productivity, and on our confidence in the premise that severe cost pressures will cause airline management to continue to strive aggressively for productivity improvements over the long term.

Our assumptions follow:

- Seats per airplane will increase -- by 1984, 747's will go from 9 across to 10; DC-10's and L-1011's from 8 to 9; narrow-body first-class sections will be reduced and coach seat density will be increased; a higher percentage of aircraft will be in high-density all coach charter configurations.
- Block speeds will remain constant -- block speed is primarily a function of hop length governed by route structure, which is not projected to change significantly unless there is a major change in the regulatory environment.
- Daily utilization (block hours flown per day) will increase -- the high capital cost of new aircraft will cause pressure for more intensive use.

Table 9

U.S. TRUNKS AND PAN AM  
PASSENGER AIRCRAFT NOT MEETING FAR PART 36<sup>1/</sup>

Carrier (1)	No. of Aircraft in 12/31/75 Fleet (2)	SH&E Projected Retirements (No. of Aircraft) (3)	Percent of Aircraft Retired (4)	No. of Aircraft Remaining 12/31/84 (5)	Replacement <sup>2/</sup>	
					No. of Aircraft (6)	Cost (Millions) (7)
AA	137	70	51.1%	67	30	\$ 999
BN	43	40	93.0	3	3	106
CO	7	5	71.4	2	2	53
DL	101	89	88.1	12	6	160
EA	167	66	39.5	101	47	1,250
NA	13	13	100.0	-	-	-
NW	42	42	100.0	-	-	-
TW	141	36	25.5	105	38	1,321
UA	265	77	29.1	188	68	2,119
WA	48	36	75.0	12	5	133
PA	<u>78</u>	<u>65</u>	<u>83.3</u>	<u>13</u>	<u>4</u>	<u>106</u>
Total	1,042	539	51.9	503	203	\$6,247

<sup>1/</sup> All aircraft except 727-200, DC-10, L-1011 and 747

<sup>2/</sup> Includes replacement of additional purchases:

CO -- two 727-100's  
BN -- one DC-8-62  
UA -- two DC-8-61's

- Load factors will rise from an average of about 55 percent in 1975 to about 60 percent in 1984 -- cost and regulatory pressures will force load factors up.

A comparison of the 1984 productivity elements with those of 1975 is shown in Table 10 for selected aircraft types by carrier.

#### 7. Aircraft Purchase Forecast

The study indicates that between 1976 and 1984 the trunklines will purchase a total of 744 passenger aircraft at a cost of about \$18.5 billion (see Table 11). If noise regulation is such that all aircraft must comply with FAR Part 36 by 12/31/84, an additional \$6.2 billion would have to be spent for replacement aircraft.

Our projections indicate that purchases will be concentrated in narrow-bodied aircraft types as replacements for the first generation jets with 522 narrow-bodied aircraft purchased, compared with 221 wide-body aircraft purchases.

#### 8. Capital Requirements

With aircraft purchase expenditures of \$18.5 billion, total capital requirements for the trunklines during the 1976-1984 period will be \$29.6 billion. Our company earnings forecasts results in internally generated funds which can provide \$18.3 billion of the total requirements. That level of internal cash generation would make the financing of this reequipment cycle feasible for the industry -- of course, dependent upon the realization of the forecasted earnings levels.

The internal cash generation forecasted is based on a projection of a sharply improved earnings trend such that all airlines average at least 7 percent return on investment during



Table 11

U.S. TRUNKS AND PAN AM  
AIRCRAFT PURCHASES 1976-1984\*

(Passenger Aircraft Only)

Carrier	Number of Aircraft								
	727 200	DC9 50	180 <sup>1/</sup> Seat M/R	DC10 10/30/40	L-1011	747	747SP	200 Seat <sup>2/</sup> L/R	Other <sup>3/</sup>
American	39	-	37	35	-	-	-	-	-
Braniff	28	-	16	-	8	-	-	-	1
Continental	8	-	13	6	-	-	-	-	2
Delta	31	-	48	-	20	-	-	-	-
Eastern	10	31	41	-	20	-	-	-	-
National	8	-	15	4	-	-	-	-	-
Northwest	17	-	18	8	-	6	-	-	-
Trans World	14	-	26	-	12	17	-	-	-
United	28	-	47	23	-	10	-	-	2
Western	10	-	12	12	-	-	-	-	-
Pan Am	-	-	-	-	-	13	22	26	-
Total	193	31	273	88	60	46	22	26	5
Cost (millions)	\$2,123	\$350	\$7,487	\$2,841	\$1,855	\$2,203	\$778	\$816	\$19

Total Number of Aircraft 744

Total Cost<sup>4/</sup> \$18,472 million

<sup>1/</sup> 180 Seat Medium Range Aircraft.

<sup>2/</sup> 200 Seat Long Range Intercontinental Aircraft.

<sup>3/</sup> BN--one used DC-8-62; CO--two used 727-100's; UA--two used DC-8-61's.

<sup>4/</sup> Cost Escalation at 5 1/2% per year.

the crucial years beginning with 1980. Net earnings under this forecast average over \$600 million annually for the 11 carriers during the nine-year period. That level of earning appears achievable when compared with the 1965-1968 period when earnings averaged about \$350 million annually, but the risks are clear when viewed in the context of the 1970-1975 period when earnings averaged only \$76 million per year.

The airline industry's current financial condition is such that many carriers would not now be able to obtain long-term loan or lease commitments sufficient to finance a major equipment program. An example of this deteriorated situation is the airlines' status with respect to the New York State Insurance Law Fixed Charge Coverage Test.<sup>1/</sup> In past years insurance companies have been a major source of borrowing for the airlines. However, as of year end 1975, the nation's largest airlines do not meet this important financial test -- TWA, Eastern, Pan Am, United and American. Although the New York law applies only to certain insurance companies and to unsecured loans, it is widely used as a basic criterion of credit worthiness, regardless of whether the law is applicable.

Airline earnings must improve soon and show a steady upward trend to provide the financing capability necessary to support the equipment purchases projected in this study.

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<sup>1/</sup> Earnings for the last two years and on average over the last five years must be 1.5 times all debt charges.

Table 12  
 U.S. TRUNKS AND PAN AM  
 CAPITAL NEEDS AND SOURCES  
 1976-1984

<u>Needs</u>	<u>Amount (billions)</u>	<u>Percent of Total</u>	
		<u>Needs</u>	
Flight Equipment-Payments	\$20.2		68%
Ground Property and Equipment	2.9		10
Debt Retirement	5.0		17
Dividend and Other	<u>1.5</u>		<u>5</u>
Total Needs	\$29.6		100%
<u>Internal Sources</u>		<u>Sources</u>	
Net Earnings	\$ 5.7	19%	
Depreciation	9.9	33	
Property Sale/Other	<u>2.7</u>	<u>9</u>	
Total Internal	\$18.3	62	
<u>Outside Financing</u>		<u>Financing</u>	
Sr. Debt--Banks	\$ 3.6	12	32%
Sr. Debt--Insco and Other	0.8	3	7
Subordinated Debt	1.0	3	9
Flight Equipment Leases	4.5	15	40
Deposits Returnable	1.2	4	10
Stock Sales	<u>0.2</u>	<u>1</u>	<u>2</u>
Total Financing	\$11.3	38	100%
Total Sources	\$29.6	100%	

Note: Additional purchases required to replace all aircraft not meeting FAR Part 36 requirements are \$6.2 billion.

## B. MAJOR DETERMINANTS OF AIRLINE CAPITAL REQUIREMENTS

### 1. Introduction

This section contains an examination of the elements upon which the typical aircraft equipment demand forecast is based with special attention to identifying those factors for which forecasting errors have the most impact and those for which current observers have the greatest difference of opinion. Forecasts of aircraft demand often vary widely. For example, two respected experts in this field -- one an airplane manufacturer and the other a financial institution -- forecast a market of \$47 billion and \$21 billion respectively.

### 2. Traffic Forecasts

Airline traffic growth over long-range periods (more than 10 years) has a consistent secular trend moderately greater than GNP reflecting improved service levels -- speed, frequency, comfort -- gains in the population's disposable income, and a declining price relative to other goods and services. However, over shorter periods of time (up to six or seven years), there have been dramatic differences in growth rates due in part to changes in the overall economic conditions, but also resulting from zigzags in airline price trends.

#### a. Long-range Traffic Forecasts

There is considerable commonality in the basic factors used by various long-range forecasters of airline traffic. Recent forecasts of airline traffic growth to 1985 are fairly tightly grouped with the ATA and United at 5 percent, Boeing and Donaldson, Lufkin & Jenrette at 6 percent, the FAA at 6.7 percent and Simat, Helliesen and Eichner, Inc. (SH&E) at 7.3 percent. The basic elements used by the forecasters tend to cluster around the following factors:

- Population growth will amount to about 1 percent per year.
- Population over 18 years of age will grow at about twice the rate of population under 18 years.
- Growth in real GNP will exceed historical rates.
- Airline prices will rise more slowly than those of other goods and services.
- Family income will increase in real terms.

These relationships have shown a high degree of consistency when measured over long periods of time -- at least ten years. Long-range forecasts of these casual factors are regarded as reliable, and traffic forecasts can be made with considerable confidence if the time period is sufficient to dampen the short-term swings.

b. Medium-range Traffic Forecasts

The forecasting of airline traffic for periods of less than ten years is difficult. The potential difference in growth rates over shorter time frames is well illustrated by the record for two recent six-year periods, 1962 to 1968 and 1969 to 1975. The 1962-1968 period was characterized by declining prices accompanied by a rapid traffic growth rate; the 1969-1975 period produced sharply rising prices and low growth rates.

<u>Domestic U.S. Airline Industry</u>	<u>1962-1968</u>	<u>1969-1975</u>
Change in Passenger Yield	(13.0%)	32.6%
Average Annual Traffic Increase	17.3%	4.2%
Total Change in Traffic	160.3%	28.2%

While economic conditions played a role in the variance in airline traffic growth rates, it is clear that the price situation was the key factor affecting the traffic growth rate.

Trends in airline pricing are a derivative of unit costs which change in response to various factors:

- Prices paid by airlines for labor and materials.
- Aircraft operating costs of newly purchased aircraft.
- Corporate operating efficiencies.
- Load productivity of aircraft in terms of seating density, load factor, and aircraft utilization.

The first three types of cost are reasonably easy to forecast (other than the exceptional case, such as the past fuel situation), and there is usually no great diversity of opinion among the forecasters, although frequently the role of price is not adequately recognized in traffic forecasts. However, load productivity, controllable by airline management, has immense potential for divergent trends; and leads us to a discussion of the interaction between its impact on unit cost, prices, and traffic growth, particularly the implications of this interaction on aircraft purchase needs.

The load productivity of an aircraft has a wide potential. Seating density of aircraft in scheduled service has swung up and down over the years within about a 20 percent differential. The same aircraft in charter service versus schedule operates with about 3 percent more seats. Also, over the years there has been about a 20 percent swing in load factors on scheduled services; charters operate in the 90 percent plus load factor range. Comparing the extremes, a charter aircraft operating in high-density seating at 90 percent load factors has more than twice the load productivity of the same aircraft in scheduled service with low-density seating in a period of the low range of load factors.

The critical observation to be made is the tendency for these interacting factors to be offsetting in terms of aircraft purchase requirements. A period characterized by favorable

airline price trends and high traffic growth rates will typically occur concurrently with trends towards higher density, higher load factors and, therefore, lower unit costs. Conversely, a period of rising airline prices and low traffic growth rates will be accompanied by trends toward lower density and lower load factors.

The casual relationships between these factors are not clearcut; but the importance of their existence for fleet acquisition is that above-average traffic growth rates tend to become "soaked up" by increases in load productivity (recognizing that a trend to higher load productivity resulting in lower unit costs and therefore lower prices may, in fact, be a casual factor in the traffic growth trend). On the other hand, low growth periods are characterized by declines in load productivity (lounge wars, etc.); capacity and traffic tend to "fit" because of offsetting factors.

Thus, despite the observation of greatly divergent traffic growth trends in the recent past, a middle-of-the-road traffic forecast combined with mid-range estimates on load productivity should produce a fairly accurate forecast of aircraft need if economic forces alone are the principal determinants of the airline equipment market.

The forecasting problem is before us now due to the evolving status of charter operations under the recent changes liberalizing charter regulations. There probably will be a rapid expansion in charter activity under the new regulations. It is not inconceivable that by the mid-1980's a 25 percent-50 percent of airline travel could be charter. In looking at the implications of such a potential trend to charter for aircraft equipment purchase, attention must be paid to both sides of the equation. In the event there is a substantial shift from scheduled service to charter, there will be large increases in load productivity as aircraft are converted into high-density charter configurations and operated at high load factors.

In and of itself, this action would indicate a reduced need for aircraft purchase. However, charter prices, much lower than scheduled prices due to lower unit costs, would stimulate more rapid traffic growth.

These relationships indicate that an industry trend toward low-price/high-density charter service versus high-price/low-density scheduled service will have little impact on new equipment requirements. Revenue potential, not RPM's per se, is the driving force for aircraft purchase; and revenue growth has been more constant than RPM growth.

	<u>1962-1968</u>	<u>1969-1975</u>
RPM Growth	160%	28%
Revenue Growth	127%	70%

### 3. Aircraft Service Life

The service life assumption is critical in an equipment purchase forecast. Predicting service life is subject to a considerable range of error because any of the several factors from which it is derived can have a significant impact, they can reinforce each other, and they can be difficult to predict. Service life can be heavily influenced by external factors -- most notably regulatory and environmental. Both of these defy forecasting precision, since by definition decisions in these areas are judgmental arising out of our pluralistic society.

The following illustrates the error potential of differing assumptions for service live of the present airline fleet.

Service Life Assumption	16 yrs.	17 yrs.	18 yrs.	19 yrs.	20 yrs.
Aircraft Retired <sup>1/</sup>	1,225	1,138	793	712	341

<sup>1/</sup> Based on average fleet age, by aircraft type by airline;  
Source: CAB Form 41, DOT United States Civil Aircraft Register, Volume 1, July 1, 1973.

Most of the recent long-range aircraft requirement forecasts utilize an "assumption" on aircraft service life. Differences in this assumption is a major cause of variance in the forecasts. For instance, the recent studies of Boeing and Donaldson, Lufkin & Jenrette (DL&J) both use the same traffic growth rate, but Boeing forecasts capital need of \$47 billion for the Domestic Trunks plus Pan Am during the 1976-1985 period as compared with \$21 billion forecast by DL&J; a major cause for the difference lies in different assumptions on aircraft service life (see Table 13).

The major factors governing the service life of aircraft are:

- competition -- obsolescence due to lack of market appeal;
- productivity -- obsolescence due to high operating costs;
- environment -- aircraft service life terminated by environmental regulation.

A lesser and diminishing factor is airline route structure.

a. Competition

Competition has usually played a major role in equipment purchase decisions. The history of aircraft manufacture has been one of new generations of aircraft whose market appeal drove out the old in major competitive markets. Major strides were made, such as pressurized DC-6's replacing unpressurized DC-4's, DC-7's speed advantage over DC-6's and the jets' vastly superior speed and comfort versus piston aircraft. Not only did the new generation offer superior speed and comfort, but they also brought reductions in operating cost (the DC-7 being the only major exception).

TABLE 13

COMPARISON OF RECENT AIRCRAFT  
INVESTMENT FORECASTS

	<u>ATA</u>	<u>DL&amp;J</u>	<u>Boeing</u>	<u>SH&amp;E</u>
Group Forecast	U.S. Airlines	Trunk & PA	Trunk & PA	Trunk & PA
Years Forecast 1976 through	1985	1985	1985	1984
Aircraft Service Life <sup>3</sup> (Narrow Body)	18	18 <sup>1</sup>	16	17 <sup>1</sup>
Inflation Rate	6%	5%	6%	5.5%
Seating Density	CAB	CAB	CAB	CAB
Traffic Growth	5%	6%	6%	7.3%
Load Factor	60%	62% <sup>2</sup>	58%	60%
Add on for Spares and Ground Equipment	20%	20%	20%	25%
Capital Expenditures (\$Bil.) Forecast	\$26	\$21	\$47	\$23

<sup>1</sup>Retirements based on individual airline analysis of needs and financing capability, whereas other forecasts are based on retirement at given elapsed year regardless of individual airline situation.

<sup>2</sup>62% domestic, 57% international.

<sup>3</sup>Wide body aircraft will not be retired over forecast period except for occasional fleet simplification actions.

In the most recent transition, wide bodies were thought to be a competitive necessity and many were bought on that basis alone, unlike most previous new generation aircraft, wide-body operating costs were not substantially improved over those existing aircraft.

In contrast to past eras, there are no new aircraft in production or on the drawing boards which will induce aircraft purchases because of market appeal to the traveler. (We rule out the Concorde because of extremely high operating costs and prohibitive noise problems in domestic flying.) What has normally been a major inducement to aircraft purchase is not a factor in the current situation. The only possibility which occurs to us would be the potential attractiveness of extremely low cabin noise levels.

It appears that other factors must provide the major motivating force for aircraft replacement.

b. Productivity

In addition to market appeal, a major factor underlying almost all previous aircraft purchase decisions was the production of seat miles at a lower cost than previously purchased aircraft, in some cases dramatically so. For instance, CAB Aircraft Operating Cost and Performance Report for the year 1965 shows the cost per seat mile of the most efficient piston aircraft, the DC-6B at 2.35¢ per seat mile compared with 1.24¢ per seat mile for the DC-8-50. This kind of a productivity potential produces rapid obsolescence and fast replacement of existing aircraft. This advantage, too, has been waning. The wide-body aircraft, due principally to their high investment cost per seat, do not have a significant seat mile cost advantage over narrow-bodied aircraft if an adequate rate of return is included in the cost equation. For instance, the CAB Aircraft Operating and Performance Report<sup>1/</sup> records all

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<sup>1/</sup> CAB Aircraft Operating Cost and Performance Report, Vol. VII, July 1973.

domestic carriers' direct operating cost per available seat mile for the year 1972 for 747's at 1.264¢ vs. 1.297¢ for the DC-8-61, the most efficient narrow-body aircraft. The DC-8-61 performance was achieved despite a lesser stage length (942 miles vs. 1962 miles for the 747) and a lower daily utilization (8.22 hrs. vs. 8.62 hrs.); both factors tending toward higher costs. In addition, the aircraft operating costs do not show the full "cost of ownership" impact; in addition to depreciation (which is reflected in the aircraft operating costs), the higher investment per seat of the 747 aircraft has an additional "cost" in the form of return which must be earned to cover the higher investment.

Airlines are now looking to a large extent at narrow-body aircraft for replacement of the existing fleet in the early 1980's. These aircraft have an extremely high investment cost per seat, nearly \$100,000 -- more than double the investment per seat of the aircraft under consideration for replacement. It is evident that it will be very difficult to produce operating economies sufficient to offset the high capital expenditure.

Airline management will be deterred from replacing existing narrow-body aircraft with new narrow-body aircraft because the impact on net income will be adverse, due to the large investment cost per seat, even though the investment might be warranted on a long-term basis. To illustrate, it can be observed that the lease cost of a \$12 million 727-200 aircraft on a 15-year lease at 10 percent interest would be \$530 per hour flown. The new airplane must generate operating cost savings of that amount or the impact of replacement on net income will be negative. But the cash operating costs (direct operating costs excluding depreciation) of an aircraft to be replaced, a B-707 for example, are currently only about \$1,100 per hour flown. Thus, the hourly operating cost of the

new aircraft must be less than \$570 [\$1,100 - \$530] before it begins to become economically attractive. The breakdown of the 707 operating costs for the year 1975 were as follows:<sup>1/</sup>

<u>Item</u>	<u>Cost per Block Hour*</u>
Flight Crew	\$ 273.64
Fuel and Oil	447.06
Maintenance, Flight Equipment	317.36
Other	<u>5.63</u>
Total Cash Operating Expense	\$ 1,043.69
Depreciation and Rentals	<u>123.77</u>
Total Aircraft Operating Expense	\$ 1,167.46

\* Domestic Trunk Carriers, B-707-100B, 12 Months Ended 12/31/75.

Note that one major component, flight crew cost, is not susceptible to reduction through new technology.

c. Environment

Environmental issues have played virtually no role in the past airline reequipment cycles. Small concessions were made to reduce noise in the early jet engines, with somewhat more attention paid to the issue with the first wide bodies; but costs were minimal and had no effect on aircraft purchase decisions. At present, however, with new aircraft available or in design showing little in the way of market appeal or overall cost economies as compared with aircraft under consideration for replacement, aircraft sound regulation has become the primary governing factor in all aircraft replacement considerations. Of the 1,758 aircraft owned as of 12/31/75 by the Domestic Trunks and Pan Am, over 1,200 must be replaced or else retrofitted at substantial cost to meet FAR Part 36 requirements.

<sup>1/</sup> CAB Aircraft Operating Cost and Performance Report, Vol. X, July, 1976.

It appears that for the next ten years airline replacement planning will be almost totally defined by the noise regulation timetable. Effort will be concentrated on decisions for replacement versus retrofit for various aircraft types. Advancement of the timetable for qualifications under FAR Part 36 will of course intensify the implementation of the programs chosen.

It is apparent that some other major environmental concern could have a major impact on the aircraft purchase cycle in some future period. Although we do not see one on the horizon at this time, we would hope that such a development could be identified early and fixed on the aircraft manufacturer drawing boards rather than after production or delivery of aircraft, as has been the case with the noise problem.

#### d. Route Structure

An airline's route structure influences the type and numbers of aircraft which it will need to service its markets. However, the selection of specialized aircraft to serve different types of markets within an airline's route structure has become a lesser factor in recent years as airlines have opted for fleet simplification.

There has been a growing recognition that all aircraft in an airline's fleet tend to perform a wide variety of missions in order to achieve routing patterns that accomplish other goals such as good market timing, through service, high utilization, efficient crew usage, etc. More attention is being paid to the efficiencies arising out of having a minimum number of aircraft types in a fleet. These efficiencies include better crew utilization, lower parts inventories, better aircraft routing potential, and so on.

Some airlines have sold relatively new aircraft and purchased replacements for the express purpose of meeting a goal of reducing the type and number of different aircraft in their

fleet. Indeed, commonality and interchangeability of parts is becoming a more important weapon in the sales arsenal of the equipment suppliers as the capital costs of spares increases.

We do not foresee any airline route structure developments which would have any important influence on aircraft purchase requirements.

#### 4. Other Determinants

In this section we discuss two factors which will probably remain stable and therefore have limited impact on aircraft equipment need, but which have a high potential to disrupt the industry in the event of major changes.

These factors are:

- Alternative transportation modes
- Energy

##### a. Alternative Transportation Modes

The emergence of a successful competitive transportation mode would divert demand for air travel and have an impact on airline capacity requirements.

Approximately one-half of all air passengers travel less than 500 miles and twenty city-pairs account for about one-third of all short-haul passengers. Under these conditions the development of a viable alternate short-haul transportation system could penetrate a sizable portion of the short-haul airline market.

Other possibilities include high speed ocean vehicle -- the Sea-flight operation of hydrofoil ships between the Hawaiian Islands has shown that this concept is possible when special market conditions exist.

Our best estimate is that no broadly successful alternatives to air travel will appear on the scene within the

next twenty years. However, it must be recognized that the potential exists. In particular, heavy government subsidization of an expanded rail network could create a transportation alternative which would divert traffic from the airlines.

b. Energy

Another "energy shock" would again cause changes in the airline industry. The most probable occurrence would be a second large-step increase in fuel prices. We have seen that the effect on the industry's capital requirements takes two basic forms:

- Price increases instituted to cover the increased costs stifle demand growth. We have seen how the 32 percent increase in airline yields from 1969 to 1975 was coincident with a reduction in traffic growth to 4 percent annually as compared with growth of 17 percent during the previous six years.
- There is an increased inducement to purchase new, more efficient aircraft to replace older aircraft.

These two pressures are offsetting to each other in their influence on aircraft equipment requirements, and the net result is presently unclear.

Of course, much more dramatic changes in energy availability are possible. They could cause drastic changes in the airline industry because fuel is such a heavy cost component (about 20 percent) and traffic volumes are sensitive to price.

CHAPTER III

IMPLICATIONS OF CHANGES IN  
AIRLINE INDUSTRY STRUCTURE FOR  
THE AIRLINE EQUIPMENT MARKET

CHAPTER III  
IMPLICATIONS OF CHANGES IN AIRLINE INDUSTRY STRUCTURE  
FOR THE AIRLINE EQUIPMENT MARKET

The previous chapter addressed the major determinants of airline capital requirements that are reasonably quantifiable and measurable. This chapter addresses the equally important qualitative portion which also shapes future equipment needs.

1. Introduction

Three main attributes of airline industry structure have particular significance for the airline equipment market. These are competition, specialization, and consolidation. Competition is a driving force for re-equipment -- more than any other single factor generating the interest in new equipment holding the promise of more attractive and more efficient and economical service. Specialization is a shaping force, providing definition to equipment needs. Consolidation is an enabling force, inasmuch as the scale and density of carrier operations are material not only to the ability of the carrier to utilize economically a fleet of aircraft and related equipment, but also to the availability of the carrier to finance equipment purchases.

The evolving structure of the airline industry has profoundly influenced past equipment programs for better

and for worse. Increased layering of competition in the airline system has accelerated the reequipment cycle in the past and has produced a repeated pattern of surge buying which rivals the economic cycle as a cause of periodic deterioration in airline earnings. Increased specialization has had the desirable effect of stimulating the development and use of new aircraft types. But, specialization has also resulted in fragmentation of the equipment market to a degree that has limited the ability of the specialized sector of the industry to optimize equipment programs. Consolidation, while affording a foundation for the financing of equipment purchases, also has dampened experimentation with new equipment types.

Looking ahead, the shape and magnitude of the equipment market inevitably will reflect developments within the structure of the industry. These developments, in turn, will be responsive both to the changing economics of air transport operations and to changes in the regulatory environment. Whether the foreseeable changes in industry structure will produce a satisfactory climate for the growth of the private U.S. equipment market, in line with national goals and objectives, is a matter of serious concern. If the evolving industry structure impairs the performance of the equipment market, inhibiting the development and production of new and improved

aircraft affording substantial economic and operational benefits, by suppliers and the absorption of new and improved equipment by the airline industry, government assistance in the process may be justifiable and, indeed, necessary. This assistance might take many forms such as intensified research and development programs, subsidies, loan guarantees, and investment tax credits. The potential for, and far-reaching consequences of, a breakdown of the private process is sufficiently important to require a continuing review of the changing airline industry structure and its impact on the timely transfer of new and improved technological capabilities into the realities of air transportation services.

## 2. The Role of Competition

The Civil Aeronautics Act of 1938, and successive amendments to date, have emphasized continuously the obligation of the Civil Aeronautics Board to foster competition in the airline industry. While from time to time there has been much debate over how much competition is needed, or desirable, to satisfy the mandates of the Act, no serious challenge has been raised to the fundamental proposition that competition has a beneficial role in bringing about and assuring a higher quality of air services and greater efficiency among airlines in supplying the air services.

It is abundantly clear that both the legislators who have enacted the laws and the administrative and regulatory agencies charged with their application have regarded airline equipment as a prime instrument for effectuating the purposes of the act. The legislation builds a wall between aircraft suppliers and airline users of commercial aircraft to assure both a hands-off relationship between the two groups and the free play of competitive forces. The Federal Aviation Act of 1958, as amended, and preceding legislation prohibit the control of an air carrier by an aircraft or an engine manufacturer. This prohibition was intended to prevent the suppliers from exercising control over their markets or, by preference in channeling the flow of new aircraft to captive carriers, to deny to other airlines new equipment advantages that would assist them in competing effectively.

The legislation also formally denies to the Civil Aeronautics Board effective control over the airline's choice of equipment and the manner in which aircraft selected by the airlines are used in commercial services. It is again clear that the intent of the legislation is to encourage the airline industry to compete for market share and for operating efficiency by free choice of suitable aircraft.

The airline industry, in turn, has perceived its best interests to lie in the cultivation of virgorous competition among its suppliers. Thus, apart from the prohibitions imposed by the applicable antitrust statutes which inhibit cooperative activities among suppliers, the airlines have actively and deliberately encouraged competition by seeking and supporting multiple sources of supply. With notably few exceptions, each successive generation of transport aircraft has been characterized by the intense sales rivalry of at least two major airframe and engine manufacturers.

Competition within the airline industry has increased as a result of CAB route certification policies that have reduced the number of large monopoly air transport markets in the U.S. to a mere handful. In addition, there has been a substantial increase in the average number of carriers providing services in competitive markets. Competition is so pervasive throughout the airline route system that the selection of aircraft, without major consideration of competitive impact, is possibly only in the short-haul, light-density sectory of the airline market spectrum. Among the aircraft operated by certificated U.S. domestic airlines, only the choice of twin-engine propeller aircraft can be said to be unaffected by competitive factors; among the aircraft operated by U.S. certificated airlines there are no

aircraft types currently in use whose selection was not dominated or affected in a major way by competitive considerations.

In the most competitive segment of the airline industry -- domestic trunkline carriers -- the most effective service lives of first line aircraft have been shortened considerably by market pressures. The average age of aircraft sold or retired from trunkline fleets is typically far less than average useful life of the same aircraft established for depreciation purposes; which, in turn, is substantially shorter than the physical operating life of the aircraft. In 1975, when aircraft in the fleets of U.S. domestic airlines had useful lives in the range of 12 to 16 years, the average age of aircraft retired or sold was nine years.<sup>1</sup>

Local service air carriers, as a class, are subject to less head-to-head competition than are trunkline carriers, since a prime function of the local service segments of the industry is the provision of services to smaller communities that do not develop sufficient traffic to support economically the services of one certificated air carrier, let alone two or more. As a result, a greater proportion of

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<sup>1</sup>The average age of aircraft disposed by trunkline carriers represented approximately 66 percent of the useful life of the aircraft retired or sold.

local service than of trunkline traffic is transported in markets served only by a single air carrier. The generally lesser exposure to competitive forces has permitted local service carriers to match more closely the effective service life of aircraft operated with the useful life established for depreciation purposes.<sup>1</sup> However, as local service carriers have become more competitive with trunklines and with each other, effective service lives of aircraft have been reduced.

The life cycle of aircraft used by specialized segments of the industry has tended to parallel the experience of those segments of the certificated industry with which the specialized segments compete. All-cargo carriers have replaced first line aircraft before the expiration of the useful life of the aircraft in line with the replacement experience of the large trunkline carriers. Similarly, intrastate carriers, specializing in the provision of high-density, short-haul services have replaced equipment and shortened the effective service lives of their first

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<sup>1</sup>The average age of aircraft retired from the fleets of local service carriers in 1975 was 8.6 years, representing 83 percent of the average useful life of the aircraft retired or sold.

line aircraft in line with the experience of their certified competitors. On the other hand, essentially non-competitive air commuter carriers, operating under the exemptions from certificate requirements of Part 298 of the CAB's Regulations, have been generally free from the pressures that have induced early equipment replacement and premature obsolescence elsewhere in the air transport industry.

Competition plays a significant role in forcing the retirement of aircraft before the end of their useful service life. The potential magnitude of this influence has been observed in Chapter II where there was a difference of forecast investment in aircraft during the 1976-1985 time period of \$47 million on the high side compared with \$21 million on the low. A large amount of the difference in these forecasts is traceable to different assumptions regarding aircraft service life.

The key ingredients of aircraft equipment purchase forecasts are 1) inflation rate, 2) rate of traffic growth, 3) expected load factor, and 4) aircraft service life. Since forecasters appear to have reached a large measure of concurrence with respect to the rate of traffic growth (5 percent - 7 percent) inflation rates (6 percent) and load factor (60 percent), the principal sources of difference in the projections

is service life. Estimates of service life hinge mostly on judgments as to when airlines will, for competitive reasons, choose to replace aircraft before the end of their potential operating life.

Load factors also are generally considered to be strongly influenced by the competitive environment. In markets where services are exclusively or predominantly supplied by one carrier and where traffic volume is in excess of the minimal levels for a daily service, load factors are usually higher than in markets of similar or greater traffic volume competitively served by two or more carriers. Some aviation analysts further maintain that, as the number of competing carriers in individual markets increases, the average load factors experienced by the competing load factors decrease. However, this conclusion is disputed by other aviation analysts who contend that the evidence fails to establish a clear-cut and significant relationship between the number of effective carriers and load factors when appropriate adjustments are made for differences in distance and traffic among markets.

In any event, it is now apparent that the role of competition in setting industry load factors has been superseded by the regulatory policies applied in the determination of rates and charges for airline services. The CAB, since 1971, has imposed load factor standards

on domestic air carriers,<sup>1/</sup> as a practical matter requiring the airlines to adjust fleet capacity and investment to the established standards in order to achieve and maintain satisfactory profits. The load factor standard has been refined to distinguish and establish higher load factor standards for certain of the principal off-shore markets. Fares to San Juan are based on a load factor standard of 62 percent, in contrast to the 55 percent standard laid down on an industry-wide basis.<sup>2/</sup> The CAB also has announced and applied a higher load factor standard in reviewing the reasonableness of fare levels in the Mainland-Hawaii markets.<sup>3/</sup> Furthermore, the CAB has initiated a proceeding to consider the amendment of the domestic load factor standards, obviously looking to the possibility of increasing substantially the 55% standard set in the DPFI. Testimony and exhibits presented by the CAB Staff in the Load Factor Case appear to support an industry-wide load factor standard in excess of 60 percent.<sup>4/</sup> Recent literature

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<sup>1/</sup> CAB. Domestic Passenger Fare Investigation, Docket 21866-6B. Order 71-4-54, April 9, 1971. See also PS-63 (Amendment No. 42 to Part 399).

<sup>2/</sup> CAB. Mainland U.S.-Puerto Rico/Virgin Islands Fares, Docket 24353, Order 74-10-78, October 15, 1974. Also Order 76-8-100, August 18, 1976.

<sup>3/</sup> CAB. Hawaii Fares Investigation, Docket 25474, Order 76-10-37, October 20, 1976.

<sup>4/</sup> CAB. Load Factor Standards Case, Docket 27417, Exhibit BE-D-1005.

recounting the results of studies to develop optimal load factor standards, based on considerations of cost and fuel economies and public service requirements, place optimum load factors for the domestic trunkline industry in the range of 65 percent to 70 percent.<sup>1/</sup>

If current regulatory policies are altered to base approved fare levels on load factors as high as 70 percent, the precise consequences of the impact of higher load factors on rates, services, and market volume cannot be projected. The higher load factors will reduce unit operating costs as the fixed costs of operation are spread over a greater density of traffic. The higher load factors also will reduce the number of flights performed and the possibilities of finding available space on preferred flights. The stimulus of lower costs and prices to be user balanced against the depressing effects of reduction in service quality clouds the outlook for both total service levels and total traffic. The questions of market behavior inherent in the

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<sup>1/</sup> Douglas, G.W. and James C. Miller III. Economic Regulation of Domestic Air Transport: Theory and Policy. The Brookings Institution, Washington, D.C., 1974, p. 91. Also: CAB. Capacity Agreements Case, Docket 22908, Exhibit DOT-T-5. Also: Mehring, Joyce. Toward Optimal Airline Fare/Schedule Combinations: Benefits and Costs of Alternative Fare/Schedule Combinations in the U.S. Transcontinental Airline Markets. Ph.D. Dissertation, Massachusetts Institute of Technology, Department of Civil Engineering, October 1974.

balancing of lower costs and lower quality of service are far from resolved in the available literature. It is not even clear that a balancing will be necessary, since lower charges to the user may stimulate sufficient new demand to provide the foundation for more services and overcome the depressing effects of greater seat inaccessibility.

Even more dimly foreseeable are the consequences of a dramatic change in the regulatory environment to provide for a freer operation of the competitive process. Certain of the stronger proponents of deregulation have suggested that the elimination of entry and exit barriers will weed out inefficient air services and bring more effective price competition into the industry. This view is disputed by proponents of regulation who argue that deregulation will result ultimately in greater concentration of air services, more wasteful deployment of capacity, and higher costs.

Unfortunately, the literature produces more heat than light in the resolution of the controversy surrounding deregulation. Consequently, a firm basis for forward planning and programming in a deregulated environment does not exist. In these circumstances, simple prudence dictates that watchful waiting and a heuristic approach are the best course to be followed through these uncharted areas.

### 3. The Role of Specialization

While the greater part of air transport services is performed by trunkline carriers authorized to engage in virtually the entire gamut of commercial air transport activities, an increasing role has been earmarked by the CAB for carriers whose activities are limited to various circumscribed and specialized services. The CAB, for example, has designated the local service class of carriers to engage primarily in short-haul services. The distinction between local and trunkline service has blurred as the route systems of the local service has expanded, but the initial and remaining differences in the principal functions of local service and trunkline carriers are still reflected in differences in fleet composition. Similarly, the Board has certificated all-cargo carriers, supplemental carriers limited to plane-load services and, by exemption, commuter carriers. Recent revenue data for those specialized sectors of the air transport industry show that they compare as follows in size characteristics:

<u>Category of Carrier</u>	FY 6/30/76 Operating Revenues (Millions)	% of Trunklines	
		<u>FY 1976</u>	<u>FY 1950</u>
Trunklines	\$14,173	100.0	100.0
Local Service	1,511	10.7	3.3
All Cargo	378	2.7	1.3
Supplemental (Passenger and Freight)	419	3.0	4.3
Commuters	250 e	1.8	*
Helicopter	11	*	*
e Estimated.	* Negligible.		

Sources: Airline Industry Economic Report, CAB, June 1976.  
Handbook of Airline Statistics, CAB.

A further area of carrier specialization has resulted from the initiation and development of intrastate commercial air services in high-density travel markets lying entirely within state borders. The California services are the most notable and entrenched of the intrastate operations, followed in chronological and size order by the Texas intrastate services. The intrastate operations, which have spread to Florida, Pennsylvania, and other states to a lesser degree, are not totally deregulated since varying types and amounts of regulatory controls are imposed by the states. However, intrastate operations are not subject to federal certification requirements and intrastate carriers are not bound by the limitations of aircraft size established by Part 298.

Intrastate operations rank in total magnitude of revenues with other specialized segments of the industry. Revenues in 1975 amounted to approximately \$213 million.<sup>1/</sup> Functionally, intrastate operations fall in a grey area between trunkline and local service carriers. Their access to high density markets and their latitude to confine services to high-density markets is more akin to the situation of the trunkline carrier. However, they are obviously limited by the geographic boundaries of the states in which they operate to relatively short-haul markets and, in this respect, their services are more similar to those of regional air carriers. Typically, intrastate carriers have provided services at rates and fares below the comparable interstate levels and have operated aircraft in high-density configurations. Their operations are, as a rule, geared for highly productive turnaround services at lower unit costs.

Several regulatory objectives may be discerned in the specialization of air carriers. The main objective is apparently equipment specialization--delineation of functions so as to effect the choice of distinctly different aircraft fleets for each specialized category of carrier. This is clearly the intention in the authorization of helicopter services. It is also the intention in the provisions made for the exempted services of commuter carriers. Originally

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<sup>1/</sup> Moody's Transportation Manual, 1976 edition (includes revenues for PSA, Air California and Southwest Airlines only).

limited to aircraft under 12,500 pounds, the exemption now covers aircraft under 30 seats and 7,500 pounds of payload. Aircraft specialization apparently underlies the role that the CAB has earmarked for the local service segment of the industry. The Board, for instance, has resisted the transition to two-engine jet aircraft and currently limits subsidy compensation to actual or nominal propeller aircraft services. It has discouraged use of three-engine jet aircraft by local service carriers, recommending against Government guarantees of loans for the purchase of B-727 aircraft<sup>1/</sup> and suggesting that losses incurred in B-727 be entirely excluded in determining the needs of local service carriers for subsidy.<sup>2/</sup> By its policies the CAB would confine the fleets of local service carriers to aircraft most suitable to medium-density traffic and relatively short distances.

A second regulatory objective in the authorization of specialized services is to supplement and to exert competitive pressure on trunkline carriers in secondary areas of interests, the development of which might be expected to be subordinated to the predominant focus of trunkline management. Patently, the all-cargo carriers and supplemental carriers perform the function of stimulating the development of cargo and charter services and,

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<sup>1/</sup> e.g., the Board recently recommended the denial of Hughes Airwest's application for guaranteed loans to purchase B-727 aircraft.

<sup>2/</sup> Investigation of the Local Service Class Subsidy Rate, CAB Docket 29160. See also: Phoenix-DesMoines/Milwaukee Route Proceeding, Docket 28800, Statement of Position of the Bureau of Operating Rights.

as a by-product of this stimulation, to expand the equipment market. In the case of all-cargo carriers, a further consideration in their authorization, although not a primary consideration, also was the possible development and use of aircraft especially designed for the exclusive handling and transportation of cargo.

The aims of the CAB's specialization program have been met with moderate and varying degrees of success. The evidence is abundant that the development of activities peripheral to the main thrust of the trunkline mission has been substantial as a result of the authorization of specialized services. Short-haul services and traffic are far in excess of the levels that could reasonably be expected if the short-haul, medium- and light-density services were authorized exclusively to trunklines. Similarly, cargo and charter traffic and service developments have been spurred by the specialized authorities granted by the CAB to all-cargo and supplemental air carriers.

The stimulation of traffic and services also has produced a concomitant overall stimulation of the equipment market. However, the success of the specialization program in producing aircraft which are optimized for the functions performed by specialized segments of the industry has been mixed. There have been few new aircraft designs developed for or used exclusively by specialized carriers. These have been

limited to all-cargo operations primarily, two-engine propeller aircraft such as the F-27 used principally by local service carriers, and the Beech 99 and Twin Otter aircraft designed to meet the earlier Part 298 limitations. Significantly, although the Part 298 limitation has been liberalized, the new ceiling has not yet resulted in a major program by U.S. manufacturers to develop and sell an aircraft which will take full advantage of the higher ceilings on aircraft size.

The fact that the Board's specialization program has produced few notable benefits in the form of new specialized aircraft designs undoubtedly is due to the limited size of equipment markets afforded by specialized carriers. However, as the specialized segments of the industry have grown in size and importance, the opportunities for the development of a specialized equipment market has grown commensurately.

Another countervailing force which has inhibited the development of the specialized aircraft market is the apparent lack of total acceptance by specialized carriers of their designated roles. All-cargo carriers aspire to become combination carriers and participate in the movement of passengers. Regional carriers are reducing and eliminating services to small communities, phasing out

small propeller aircraft, and seeking long-haul routes traditionally considered the exclusive preserve of trunklines. Charter carriers, competing principally with trunklines, have perceived no need for specialized equipment, except in military contract services, and have pressed for more liberal operating rights which would permit the transportation of small groups of passengers on a basis not materially different from the group and tour basing arrangements of combination carriers. Thus, there has been a reluctance to commit investment to equipment which would have little or no utility in the performance of an expanded role.

#### 4. The Role of Consolidation

A review of the Annual Reports of the CAB shows that the number of operating carriers holding certificates of public convenience and necessity from the CAB compares as follows for 1950 and 1974:

	<u>9/30/50</u>	<u>6/30/74</u>
Trunklines	17	11
Local Service Carriers	20	8
All-Cargo Carriers	4	3
Supplemental Carriers	85	8 <sup>1/</sup>

Source: Annual Report of the Civil Aeronautics Board, 1950 and 1974.

<sup>1/</sup> An additional three (Purdue, Standard, and Universal) held certificates but were not operating in 1974.

At the same time, the volume of services performed by each specialized group and the revenues derived from those services have increased substantially. As a result, the average carrier is a larger, more stable, and more financially secure entity. In short, the trend of consolidation has produced a dramatic improvement in the quality, as well as the quantity, of the equipment market represented by the specialized segments of the industry. The local service carriers, for instance, patently now have the size and financial characteristics to provide an attractive market for a specialized aircraft optimized for use in relatively short-haul (under 750 miles) and medium-density (less than 100 passengers daily) markets. At least two foreign suppliers have perceived the local service market to be sufficiently sizable and attractive to provide the prime, if not the entire focus, of U.S. sales campaigns.<sup>1/</sup>

The effects of the forces of consolidation are also manifest in the commuter and intrastate segments of the airline industry. The patterns of development are strikingly similar to those among carriers holding certificates from the CAB as each segment of the industry has gone through an early proliferation phase, followed by a slower, but inexorable, phase of market and carrier consolidation

<sup>1/</sup> Fokker has promoted VFW-614 and F-27 aircraft mainly among local service carriers; the aborted HS-146 sales campaign was similarly directed to the local service industry.

in which market experimentation has given way to market selection and weaker carriers are absorbed by other carriers. In the process of consolidation the number of operating entities is reduced; the number of markets served by the remaining operating entities is reduced; the average volume of services per carrier is increased; and the average number of aircraft and average size of aircraft in the fleets of the operating carriers both increase.

The trend of consolidation in the commuter and local service airline segments of the industry, insofar as it can be traced from available data, illuminates the process that has occurred typically in other specialized segments of the industry. Table 1 shows data respecting the size of aircraft fleets in use and the seat capacity of aircraft comprising the commuter and local service airline fleets, demonstrating how the consolidation process led to greater fleet size and much larger aircraft.

The California experience of intrastate air carriers also illuminates the processes of proliferation and consolidation which occur when the forces of the marketplace are free to operate in the airline industry. In a period of 15 years the number of intrastate carriers operating entirely

TABLE 1

TRENDS IN AIRCRAFT FLEET CHARACTERISTICS  
1967-1975

Data for Calendar Year Ended (1)	Commuter Airlines			Local Service Airlines		
	No. of Aircraft Per Operator (2)	No. of Fleet Seats Per Operator (3)	Per Aircraft (4)	No. of Aircraft Per Operator (5)	No. of Fleet Seats Per Operator (6)	Per Aircraft (7)
9/30/67	4.15	31.0	7.46	32.3	1,438.8	44.5
9/30/69	5.65	57.6	10.20	43.8	2,547.3	58.2
9/30/71	5.85	64.3	10.99	43.9	2,824.1	64.3
9/30/73	4.91	57.0	11.60	51.0	3,352.9	65.7
9/30/75	5.55	73.9	13.32	43.1	3,071.8	71.3

SOURCES: Scheduled Air Taxi Operators FAA 1967-1968 Incl.

Commuter Air Carrier Operators CAB 1969-1975 Incl.

Flight Magazine, June 1968-1976 issues.

CAB, Aircraft Operating Cost and Performance Report, 1968-1976 issues.

within the State of California increased to a peak of 16 carriers and, then, by the process of consolidation, decreased to three--the number of carriers presently engaging in schedule intrastate passenger services (see Table 2).

The experience of the California intrastate carriers is further instructive with respect to the role of consolidation in shaping the equipment market. Out of the weak, fragmented intrastate services, almost entirely equipped with small two-engine propeller aircraft, two relatively large entities have emerged, each capable of operating a fleet of jet aircraft. One carrier, perhaps overreaching, actually entered into an arrangement to purchase wide-bodied L-1011 aircraft (which the carrier subsequently sold at a loss).

#### 5. Looking Ahead

The airline industry appears to be on the threshold of major changes in the regulatory and economic environment -- changes which hold the potential for fundamental and far-reaching shifts in the trends of competition, specialization, and consolidation that will impact significantly on the equipment market. There is indication of an alteration of regulatory policies to relax the barriers to entry and exit in the now intensely regulated sectors of the

Table 2

CALIFORNIA INTRASTATE CARRIERS  
1946-1976

<u>Carrier</u>	<u>Date of Entry</u>	<u>Period of Operation</u>
1. Pacific Air Lines	3/06/46	15 months
2. California Central Airlines	1/02/49	6 years
3. Robin Airways	3/16/49	6 months
4. California Sky Coach	4/26/49	1 month
5. Pacific Southwest Airlines	5/06/49	Still Operating
6. California Arrow	5/23/49	6 months
7. Channel Airways	5/27/49	3 months
8. Western Air Lines of California	8/19/49	9 months
9. California Pacific Airlines	1/21/50	19 days
10. California Coastal Airlines	3/15/55	2½ years
11. Paradise Airlines	5/14/62	22 months
12. Futura Airlines	6/15/62	3 months
13. Trans California Airlines	8/15/62	2 years
14. Blatz Airlines	7/05/63	6 months
15. Mercer Enterprises*	4/18/64	Still Operating
16. California Time Airlines	9/19/65	4½ months
17. Air California	1/16/67	Still Operating
18. Holiday Airlines	8/01/67	7½ years

Note: Includes only intrastate carriers operating scheduled services with DC-3 or larger aircraft.

\* Name changed to Pacific American Airlines in April 1976.

Sources: William A. Jordan. Airline Regulation in America, 1970, Appendix 1;  
Simat, Helliesen & Eichner, Inc. An Analysis of the Intrastate Air Carrier Regulatory Forum, Vol. II, Technical Report, pp. II-25 to II-35.

industry. The result may be expected to be a triggering of a further process of proliferation and consolidation which has characterized the evolution of services in each specialized sector of the industry when opened. Opinion is divided on where the industry would be left when the forces of consolidation are spent. It is the view of the more avid proponents of deregulation that more effective competition in the areas of both services and prices will produce more efficient operating units, and services more responsive to the demands of users. The strongest opponents of deregulation agree that the forces of consolidation, given free play, will produce a greater degree of concentration in an industry already characterized by oligopolistic behavior.

The financial community has signaled grave concern that deregulation will destroy the investment standing of the airlines by creating instability and uncertainty in the industry outlook. The accuracy of the judgments of the financial community may be debatable, but the consequences of the judgments are outside the pale of doubt. If the financial community, acting on the basis of its judgment, withholds financial support from the industry, the effect on the airline equipment market will be traumatic. Indeed, the judgment of the financial community is likely to be a self-fulfilling prophecy, bringing about the very Balkanization and fragmentation of the market which is feared.

The effect of legislative deregulation may be matched by administrative deregulation if there is a large change in the direction and emphasis of regulatory policies to replicate the essential conditions of a deregulated environment. The CAB, under the broad mandates of the Act of 1958, may relax entry and exit requirements, reduce or eliminate financial support in the form of subsidy, guaranteed loans and permissible rate of return levels built into the rate structure. Recent policy pronouncements of the CAB indicate that the agency is moving in the direction of deregulation by administrative fiat. In this regard, the unanimous endorsement of the CAB of the statement of the Chairman to the Congress appears to signify that the CAB is about to embark on policies that, in fact, deregulate large sectors of the industry.

The statement includes the following observations about deregulation:

"1. Economic regulation should be redirected so domestic air transport is, in time, essentially governed by competitive market forces. In the long run, we believe this can result in a more efficient, lower-cost system which will successfully respond to public needs for air travel.

2. The transition to a system emphasizing free-market forces should be gradual and carefully monitored. Transition plans must take into account the potential need for regulatory actions to prevent or mitigate special problems

which could arise during transition and could adversely affect the traveling and shipping public or other national interests.

3. It must be recognized that there are uncertainties and risks involved both in movement toward and in operation under a regime relying essentially on market forces. Specifically, these risks and uncertainties include possible disruptions of service and the possible failure of less efficient carriers. These are natural concomitants of a free competitive environment. But we believe there also will be significant risks and uncertainties, and fewer potential future benefits if the present regulatory regime is continued."

The Chairman also went on to state:

". . . [a] fundamental long-term regulatory path which can be pursued is one which moves in the direction of relying fundamentally on competition and the operation of natural market forces -- a system which minimizes Governmental interference to the greatest extent possible and emphasizes greater management freedoms in entry, exit and pricing. As we have previously stated, it is the Board's judgment that this is the preferable course."

If future changes in airline industry structure are, in the light of uncertainties as to the regulatory and economic environment, matters of speculation and conjecture, the implications of potential changes for the airline equipment market are even more difficult to chart. Developments to date have fostered successive generations of larger,

faster, and longer range aircraft of each distinct specialized segment of the industry. The process has been assisted by growth in the primary demand for airline services and a rapidly advancing technology. Now the rate of growth in demand has diminished; the foreseeable economic and quality gains from technological advances also have diminished. The impact of a slowing of growth and of the rate of technological obsolescence are reinforced by a high rate of inflation which increases the cost of new aircraft and erodes the purchasing power of cash reserves accumulated through depreciation. Adding the possibilities for significant changes in trends of competition, specialization, and consolidation multiplies the uncertainties that the processes will produce an equipment market that will satisfy national objectives and goals.

CHAPTER IV

IMPLICATIONS OF CHANGES IN AEROSPACE INDUSTRY STRUCTURE  
ON THE AIRLINE EQUIPMENT MARKET

## CHAPTER IV

### IMPLICATIONS OF CHANGES IN AEROSPACE INDUSTRY STRUCTURE ON THE AIRLINE EQUIPMENT MARKET

#### 1. Introduction

The airline re-equipment process in terms of the magnitude and timing of new aircraft purchases is not determined entirely by the airlines. The aircraft manufacturers also play a crucial role. It is they who design the new aircraft and decide when to commit to a production decision. If a new design offers substantial improvements in productivity over existing aircraft, the airline re-equipment cycle will be accelerated as carriers rush in with orders to get a hoped-for priority in the delivery line. Being the first carrier on a route with a new aircraft is viewed as a distinct competitive sales advantage, quite in addition to the economic benefits derived from reduced costs per available seat mile.

Predicting the size and timing of the next re-equipment cycle involves considering what the manufacturers will be offering and when. Part of the answer requires a forecast of new technology (or the application of existing technology in new ways). Another part depends upon the structure, resources, and financial health of the manufacturing industry.

Technology and the role played by NASA in furthering the state of the art is a critical element in shaping the size and timing of the next re-equipment cycle. In this study no attempt has been made to evaluate what the impact of new technical developments might have on the re-equipment cycle. These developments include on-going R&D by NASA in

such areas as laminar flow devices, improved engines, turbo-prop advances and others. The success of these efforts will hinge upon how well these new technologies meet the emerging challenges of the future in such areas as:

- Quieter aircraft without unacceptable loss of operating economy and performance.
- Lower unit operating costs in an environment of escalating fuel prices without sacrificing service quality.
- Relief from airport and airway congestion without the loss of economy and performance.
- Improved reliability of service without loss of operating economy or the imposition of unacceptable capital burdens.

The remainder of this section discusses the structure and current posture of the aircraft manufacturing industry and identifies those factors which are most important in shaping its future.

## 2. Industry Structure and Revenue Composition

The commercial aircraft industry is a subset of the aerospace industry and is composed of airframe manufacturers, engine manufacturers and a host of suppliers of avionics and myriad parts and equipment. The aircraft/engine manufacturers without exception are also in the defense and space business as well as the non-aerospace commercial market. As a consequence the fortunes of these companies are tied to more than just commercial aircraft sales. Furthermore, one's ability to get a clear picture of their strengths and weaknesses in the commercial aircraft business using such measures as scientists and engineers employed, finances, return-on-investment, debt structure, etc. is complicated by the heterogeneity of their customers and their product lines.

Although government contracting regulations are explicit about separating commercial costs from government reimbursable costs, there are the inevitable "joint costs," transfers of personnel between jobs on an hour-by-hour basis and technology transfer from military to civilian aircraft. The degree of cross-subsidy of civilian aircraft development and production by military contracts has long been the subject of study and, not infrequently, acrimonious debate. We take no position on this subject for purposes of this study except to note that aerospace industry data upon which we must rely to gauge the health of the industry often inextricably combine commercial aircraft, military and space information together.

The following ten year history from 1966 through 1975 (see Table 1) shows the relative importance of aircraft to the aerospace industry (over 50 percent of industry sales since 1967).

Aircraft sales can be further divided into government and commercial sales. Because a different data source must be used, total sales from this source which bases its statistics on 55 aerospace companies who report to the Bureau of Census are less than estimated for the entire industry in Table 1 below. A 10-year history of sales of complete aircraft, aircraft engines and parts is shown in total and for sales to the U.S. Government expressed in both absolute dollars and as a percentage of annual industry sales.

As will be seen from the data in Table 2 below, the importance of the United States Government as a customer for aircraft has been declining on average over the last decade dropping from 62.5 percent of industry sales in 1966 to 46.3 percent in 1975. U.S. Government purchases are overwhelmingly military aircraft and parts, although sales to all government agencies are included in the data. It is anticipated that military aircraft sales will remain at or near

TABLE 1

AEROSPACE INDUSTRY SALES BY PRODUCT GROUP  
(billions of dollars)<sup>1</sup>

Year	Sales	Subtotal Aerospace Sales	Product Group			
			Air- craft	Missiles	Space	Non- Aerospace
1966	24.6	22.0 <sup>2</sup>	11.9	4.0	6.0	2.6
1967	27.3	24.7	15.0	4.4	5.3	2.6
1968	29.0	26.5 <sup>2</sup>	16.6	4.7	5.1	2.5
1969	26.1	23.4	14.1	5.0	4.3	2.7
1970	24.9	22.3	13.3	5.4	3.6	2.6
1971	22.2	19.7 <sup>2</sup>	11.4	5.0	3.2	2.5
1972	22.8	20.2	11.9	5.2	3.1	2.6
1973	24.8	21.5	13.3	5.2	3.0	3.3
1974	26.4	22.3	14.0	5.2	3.1	4.1
1975	28.0	23.3	15.2	4.8	3.3	4.7

SOURCE: Aerospace Facts and Figures, 1976/1977, Aerospace Industries Association of America, Inc. (AIA).

<sup>1</sup>Rounded to nearest 100 million

<sup>2</sup>Does not sum due to rounding.

TABLE 2

AIRCRAFT, ENGINES AND PARTS  
(Sales in Millions of Dollars)

<u>Year</u>	<u>Total</u>	<u>U.S. Govt.</u>	<u>Percentage Govt. to total</u>
1966	8,725	5,458	62.5
1967	11,894	7,141	59.7
1968	13,850	7,411	53.5
1969	12,764	7,161	56.1
1970	13,466	7,586	56.3
1971	11,392	6,313	55.4
1972	10,153	4,954	48.8
1973	12,278	5,539	45.3
1974	13,542	5,982	44.2
1975	14,323	6,633	46.3

SOURCE: Bureau of Census "Current Industry Reports," Series MQ37D (Quarterly) as reported by AIA, op. cit.

current levels of between \$5 to \$7 billion annually. Thus further growth in the aircraft segment of the aerospace industry is expected to come from commercial sales.

The following table contains a 10-year history of civil aircraft shipments in absolute numbers and dollar values. Especially noteworthy is the increase since 1971 in revenues to the general aviation manufacturing industry. The industry remains, however, dominated by commercial transport aircraft sales which accounted for less than 3 percent of the total number of aircraft shipped but 74 percent of the value of shipments. The number of aircraft involved is so small that a handful of orders won or lost can make a big difference in company results.

TABLE 3

## CIVILIAN AIRCRAFT SHIPMENTS

(Number and Value in Millions of Dollars)

Year	Total		Transports		Helicopters		Genl. Aviation	
	No.	\$	No.	\$	No.	\$	No.	\$
1966	16,674	2,183	344	1,699	583	40	15,747	444
1967	14,512	2,861	480	2,458	455	43	13,577	360
1968	14,922	4,267	702	3,789	522	57	13,698	421
1969	13,505	3,598	514	2,939	534	75	12,457	584
1970	8,076	3,546	311	3,158	482	49	7,283	339
1971	8,158	2,984	233	2,594	469	69	7,466	321
1972	10,576	3,308	227	2,660	575	90	9,774	558
1973	14,709	4,665	294	3,718	770	121	13,645	826
1974	15,325	5,090	332	3,993	828	189	14,165	908
1975	15,236	5,086	315	3,779	864	274	14,057	1,033

SOURCE: Transport Aircraft and Helicopters: Aerospace Industries Association; General Aviation: General Aviation Manufacturers Association.

By simple division using the above table it can be seen that the average value of a transport aircraft shipped in 1966 was \$4.9 million versus approximately \$12.0 million in 1975. Thus the capital requirements for both manufacturer and buyer have more than doubled on a per unit basis in 10 years.

Table 4 below contains a five-year sales history of U.S. manufactured transport aircraft by type and company.

TABLE 4

TRANSPORT AIRCRAFT PRODUCTION AND ON ORDER  
1971 through 1975

	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>Total</u>
Total - all types	223	227	294	332	315	1,391
Boeing - all types	<u>141</u>	<u>96</u>	<u>148</u>	<u>174</u>	<u>169</u>	<u>728</u>
B-707	10	3	11	21	7	52
B-727	33	41	92	91	91	348
B-737	29	22	17	41	51	160
B-747	69	30	28	21	20	168
Lockheed - total	<u>13</u>	<u>51</u>	<u>68</u>	<u>64</u>	<u>68</u>	<u>264</u>
L-1011	-	17	39	41	25	122
L-100-30/C-130	13	34	29	23	43	144
McDonnell Douglas - total	<u>69</u>	<u>80</u>	<u>78</u>	<u>94</u>	<u>78</u>	<u>399</u>
DC-8	13	4	-	-	-	17
DC-9	43	24	21	48	35	171
DC-10	13	52	57	46	43	211

SOURCE: Aerospace Industries Association, company reports.

It will be seen that Boeing leads the market in total units sold. If the market is segmented by aircraft stage length, it appears that the DC-9 of McDonnell Douglas leads in the short haul, although there obviously is serious competition with the mid-range 727- which has been the most successful aircraft in airline history in terms of units sold. In the long-haul market<sup>1</sup> over the past five years, McDonnell Douglas just nosed out Boeing (228 versus 220) while Lockheed was a distant third with sales of 122 aircraft.

U.S. exports of aerospace products are dominated by civilian aircraft, engines and equipment accounting in 1975

<sup>1</sup>Includes B-707, B-747, DC-8, DC-10 and L-1011.

for \$5,350 million out of total aerospace exports of \$7,821 million or 68.4 percent. The aerospace industry is an important and consistent positive contributor to our nation's trade balance with imports relatively insignificant ranging from approximately 8 to 15 percent of exports. Table 5 below contains a five-year history of military and civilian aerospace exports. The civilian shipments are comprised of complete aircraft, engines and equipment (and spares) while the military shipments include missiles in addition to aircraft.

TABLE 5  
EXPORTS OF U.S. AEROSPACE PRODUCTS  
(Millions of dollars)

<u>Year</u>	<u>Military</u>	<u>Civilian</u>	<u>Total</u>
1971	1,123	3,080	4,203
1972	841	2,954	3,795
1973	1,354	3,788	5,142
1974	1,822	5,273	7,095
1975	2,470	5,351	7,821

SOURCE: Bureau of the Census, "U.S. Exports, Schedule B, Commodity and Country, Report FT410 (Monthly) as reported in Aerospace Facts and Figures, op. cit.

The importance of U.S. manufacturers in the world aircraft market is illustrated by the following table. The market is dominated by the U.S. and as the table demonstrates, U.S. built aircraft have been increasing their share over the past decade. With the exception of the Airbus (A-300) and the Concorde there has been no new trunkline equipment developed outside the U.S. during this period. This would appear to establish clearly that access to the U.S. equipment

is the key access to the world market.

TABLE 6

U.S. MANUFACTURED TRANSPORT AIRCRAFT IN  
OPERATION IN WORLD\* CIVIL AIRLINES

<u>Year</u>	<u>Total in Operation</u>	<u>U.S. Manufactured</u>	<u>U.S. Percentage of Total in Service</u>
1966	3,541	2,556	72.2
1967	3,725	2,735	73.4
1968	3,902	2,890	74.0
1969	3,999	3,030	75.8
1970	3,983	3,042	76.4
1971	3,973	3,094	77.9
1972	4,097	3,247	79.3
1973	4,225	3,310	78.3
1974	4,133	3,311	80.1

SOURCE: International Air Transport Association, "World Wide Transport Statistics."

\*Excludes USSR and Red China and non-IATA members.

A few additional data points will underscore U.S. dominance of the world commercial aircraft market now and over the immediate future. It is estimated that approximately 2,659 aircraft are in service with U.S. air carriers or about 65 percent of the total world fleet. As of December 31, 1975 foreign air carriers had 258 U.S. aircraft on order in the U.S. which accounted for around two-thirds of the U.S. backlog.<sup>1</sup>

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<sup>1</sup>Aerospace Facts and Figures 1976/77, AIA, pg. 36.

Thus foreign carriers are ordering proportionately more equipment in the U.S. than our own airlines. While the recent recession can explain some of this phenomena it bodes well for at least the near term for U.S. manufacturers.

Sales and market share data along with shipments of units and exports do not give the whole picture of the U.S. aerospace industry. As with the U.S. airline industry, there is considerable concern expressed by industry spokesmen concerning the ability of the industry to generate and attract the capital it needs. In brief, this industry is also a victim of recent high inflation rates. Its plant and equipment is depreciated at its purchase value (book value) while its replacement value continues to skyrocket. When the asset reaches the end of its physical or economic life (if more efficient equipment is developed), the company simply has not generated enough cash through depreciation to replace it. This industry is not unique in having this problem. It is faced to varying degrees by all of U.S. industry. That it is widespread, however, does not diminish the seriousness of the problem.

Ability to generate capital either internally or through borrowing is obviously a function of a company's earning power both historic and projected. Profits in this industry are considerably below the rates experienced by U.S. industry as a whole. This is shown in Table 7 below.

This data includes operating results for defense operations and commercial business. Profits on defense contracts in the aggregate are usually lower than experienced on commercial work. Nevertheless, it is not possible to tell from this data what the commercial aircraft "side" of the business earns and thus provide some indication of the capital it might be capable of attracting. Furthermore, the employment of "profits as a percentage of sales" as being indicative of

TABLE 7

## MANUFACTURING PROFIT

(after tax profits as a percent of sales)

<u>Year</u>	<u>All Manu- facturers</u>	<u>Non-durable Goods</u>	<u>Durable Goods</u>	<u>Aerospace</u>
1966	5.6%	5.5%	5.6%	3.0%
1967	5.0	5.3	4.9	2.7
1968	5.1	5.3	4.9	3.2
1969	4.8	5.0	4.6	3.0
1970	4.0	4.5	3.6	2.0
1971	4.1	4.5	3.8	1.8
1972	4.4	4.6	4.3	2.4
1973	4.7	5.0	4.5	2.9
1974	5.5	6.4	4.7	2.9
1975	4.6	5.1	4.1	2.9

SOURCE: Federal Trade Commission, "Quarterly Financial Report for Manufacturing Corporations," as reported by AIA, op. cit.

the investment attractiveness of an industry can be misleading and perhaps even irrelevant. The fact that supermarkets earn only one or two percent on sales does not make them an undesirable business. Earnings data are more meaningful when expressed as a percentage of the investment required to generate these profits.

Thus these data when cast as a percentage return on stockholders equity give a somewhat different perspective as illustrated in Table 8 below.

TABLE 8

## AFTER TAX RETURN ON EQUITY

<u>Year</u>	<u>Equity</u>	<u>After Tax Profit</u>	<u>Profit as % of Equity</u>
1971	7,317	423	5.8
1972	7,816	609	7.8
1973	8,475	855	10.1
1974	8,279	866	10.5
1975	8,663	925	10.7

SOURCE: Federal Trade Commission, "Quarterly Financial Report for Manufacturing Corporations" as reported by AIA, op. cit.

The above returns on investment (stockholder equity) especially over the last four years give a somewhat brighter picture of the aerospace industry. Before tax returns are over 20 percent [and interest payments on debts are paid with pre-tax money], which is a reasonably but hardly an outstanding return. The most recent<sup>1</sup> Business Weeks' Survey of Corporate Performance which is based on 380 companies reports a return on stockholders equity (after tax) of 16.1 percent for 12 months ending September 30, 1976 for aerospace industry. This compares with 3.6 percent for the airlines, 11.5 percent for banks, 15.9 percent for the chemical industry, and 19.1 percent for the drug industry. For all industries including service industries the return on equity was 13.7 percent.

It should be recalled, however, that aerospace industry data include military sales. Cost overruns of the magnitude encountered by Lockheed on the C-5A contract and Grumman on

<sup>1</sup>As reported in Business Week, November 15, 1976.

"aerospace industry." With the decline in NASA funded space R&D and a DOD budget that has failed to keep pace with inflation, employment of scientists and engineers in research and development by industry has declined steadily since 1968. The table below contains a 10-year employment history.

TABLE 9

EMPLOYMENT OF SCIENTISTS AND ENGINEERS  
FOR RESEARCH AND DEVELOPMENT  
(Total and Aerospace)

<u>Year</u>	<u>Total</u>	<u>Aerospace</u>	<u>Aerospace as a Percent of Total</u>
1966	353,200	99,300	28.1%
1967	367,200	100,400	27.3
1968	376,000	101,100	26.8
1969	387,100	99,900	25.8
1970	384,100	92,600	24.1
1971	366,800	78,300	21.3
1972	349,900	71,200	20.3
1973	356,600	72,300	20.3
1974	358,200	70,800	19.8
1975	375,500	66,800	18.7

SOURCE: National Science Foundation as reported by AIA,  
op. cit.

While it is impossible to draw any firm conclusions from the above statistics the data nevertheless is suggestive of a possible decline in the depth of technical capabilities in industry. Speculating further, when there is a reduction in R&D employment in industry the research tends to be hit harder than the development. Industry, by necessity, operates over a shorter planning horizon than government.

### 3. Ability of Manufacturers to Meet Future Needs

From the preceding review of the commercial aircraft manufacturing industry, a few observations about its current strength can be made. Despite cutbacks in industry employment and great uncertainty about the ability of airlines to finance new aircraft purchases, the U.S. industry is in relatively good shape. Its preeminence as a supplier to the world's airlines continues with order backlogs from foreign carriers continuing to grow. Profits are being recorded by the major manufacturers and despite the credit squeeze on the U.S. airlines orders are being placed each month (United Airlines, for example, recently ordered 28 Boeing 727-200's).

As has been observed, the health of the industry clearly is tied to the U.S. airline market. The level of aircraft orders placed by the U.S. airlines has in the past and will continue over the foreseeable future to spell the difference between an industry which is a strong force for the achievement of national goals and one where national opportunities are lost. Recent forecasts of new aircraft needs are based on what may prove to be very conservative forecasts of passenger growth of around 6 percent annually. Parenthetically, it is interesting to note that forecasters are inordinately influenced by very recent experience. Thus if in a recession or low growth period forecasters will extrapolate these low growth rates over a decade or even longer. A similar phenomena is observed during periods of high traffic growth. Indeed, much of the over-capacity experienced as a result of the wide-body buying spree of the airlines was attributed to optimistic forecasts.

The aircraft manufacturer is not simply a reactive party to the re-equipment cycle which through its market intelligence decides when to offer a new aircraft in response to

airline requests. Although working very closely with the airlines, manufacturers also work independently to develop new or improved aircraft. In the past what might be termed great leaps forward in productivity were found with pressurized aircraft, turbo-prop aircraft and turbine powered aircraft. Many industry observers and technical experts believe that the next generation of aircraft while being superior to existing aircraft will not produce savings as large proportionately as in past re-equipment cycles. The next generation of aircraft will probably be the product of consolidation of the best features of the various state-of-the-art systems and equipment improvements developed over the past decade. A number of innovations developed through NASA R&D such as laminar flow devices, bonded materials, etc. will probably be incorporated into the new designs. While no single development in itself offers dramatic improvements in productivity when taken in combination the savings are very significant.

At the present time one senses uncertainty and caution on the part of manufacturers about when, if at all, they should announce a decision to go ahead on a new aircraft program -- a 7X7,<sup>1</sup> DC-X-200 or whatever. Parts of the uncertainty probably stems from having recently watched their customers almost choke to death in trying to digest the Jumbo jets. Another may stem from doubts about whether or not they have something on the drawing boards that is really that superior to possible modification to existing aircraft. Overlaying the entire scene is, of course, the uncertainty about the ability of the airlines to finance aircraft purchases (see Chapter II).

A problem internal to the manufacturers is the huge investment required to produce a new aircraft, which can cost in the one billion dollar range or over for development,

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<sup>1</sup> Just as this report was going to printing, Boeing announced a go-ahead on the 7X7.

tooling and production, and testing and certification. Before a manufacturer will commit to that magnitude of an investment it must have a sufficient number of airline customers signed up (with deposits). Furthermore, the financing requirements, long payback period and market uncertainty may be too great and risky for any one manufacturer to be able or willing to undertake the venture alone. Development and manufacturing consortia may be formed with an eye both to spreading the risk and reducing the competition.

4. Major Uncertainties: Selected Issues with Potential to Alter Significantly Future Aeronautical Supply and Demand

There are a number of issues and/or uncertainties about the future, the outcome of which could significantly affect the demand for new aircraft and how the demand might be met.

Multi-national Aircraft and Engine Manufacturing Consortia

The table below lists some recent multi-national development and manufacturing consortia that are currently producing equipment or have reached agreements to proceed. The table contains only civil aircraft and engine products. Other consortia exist for the development and production of military aircraft especially among the Europeans.

Two overriding forces are responsible for the formation of international joint ventures: skyrocketing development and production costs and rising nationalism.

Development costs for new programs are huge. For example, the Boeing 7X7 is expected to cost around 1.0 billion dollars. The JT10D engine development will be in the 500 million dollar range. Along with the problems any single company would have in raising such huge amounts of capital, the risks are equally large. Program failure would almost certainly end up in company bankruptcy. Thus, the risk must be spread.

The lead time from the decision to proceed with a program until the first aircraft or engines are produced for sale is three to five years or longer. During this period many changes in the economy, the market and the competitive picture can occur, thus further increasing the uncertainties and thus the risk of such ventures.

TABLE 10

<u>PRODUCT</u>	<u>CONSORTIA MEMBERS</u>
JT10D engine	Pratt & Whitney (U.S.), Rolls-Royce (U.K.), M.T.U. (F.R.G.) and FIAT (Italy)
CFM56 engine	General Electric (U.S.) and SNECMA (Fr.)
Mercure	Aerospatiale (Fr.), McDonnell Douglas (U.S.) and Dassault-Breguet (Fr.)
Boeing 7X7 <sup>1</sup>	Boeing (U.S.), Aeritalia (Italy), (Japan?)
Concorde	British Aerospace Corp. (U.K.), Aerospatiale (Fr.)
A-300B	Aerospatiale (Fr.), Deutsche Airbus (F.R.G.), VFW-Fokker (Holland), Hawker Siddeley (U.K.)

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<sup>1</sup> Consortium still under discussion with no firm agreements either as to partners or program

There is a "hand in glove" relationship between European (and Japanese) governments and their aerospace and airline companies. In some instances they are nationalized and in others heavily subsidized. Since in most instances their airlines are government-owned, these nations can offer the promise of aircraft orders in exchange for consortium membership. For example, McDonnell-Douglas is expected to get orders for up to 76 DC-9's and 8 DC-10's from Air France in exchange for joining with the French as a partner in the Mercure aircraft program. McDonnell-Douglas' role will be primarily that of sales agent for the French since virtually all the production work will be performed in France.

The trend toward multi-national consortia will continue and strengthen as it becomes more apparent that the costs and risks in this industry are so great that the ideal solution for manufacturers might be the creation of an international aircraft and engine cartel. We are not suggesting this could or even should happen. National defense requirements and the Sherman Act (among a long list of other laws) could prohibit U.S. involvement which would of course be essential to its success. Nevertheless, moves toward this "ideal" will characterize this industry in the future.

A possible future scenario could be the domination of new aircraft and engine sales by say a joint U.S.-French aircraft and a joint U.S.-British engine. Under these circumstances a number of important impacts might be felt in the United States which raise policy issues as to what the stance of the federal government should be to such arrangements in the future.

- Up to one half or even more of the total production force might be overseas in the nations of one or more U.S. partners. There would be a roughly proportionate outflight of gross national product,

trade surpluses and U.S. subcontractor revenues. On the other hand, one might argue that had the U.S. not joined the consortium then it would not have retained even one half of the sales and jobs.

- Technology transfer from the U.S. to overseas might take place. Thus to the extent that NASA-sponsored R&D was utilized in the new development, overseas companies and/or governments would become direct beneficiaries of the U.S. taxpayer-supported research.

In light of the above-hypothesized impacts the role of NASA aeronautical aviation activity would have to be re-examined. On one extreme some might argue that federal support of R&D should cease because it directly or indirectly subsidizes potential U.S. competition. On the other extreme some might argue that stepped up federal R&D expenditures would be necessary to improve our technology and thus strengthen our bargaining position with overseas producers. It would not be difficult to imagine some support for direct U.S. government subsidy on either an outright grant or loan basis to U.S. industry to help finance its share of new aircraft/engine development. In short, the practices of foreign governments might be adopted by the U.S. to place our companies on a parity with their foreign partners.

#### Structure of U.S. Aircraft/Engine Manufacturing Industry

At the close of World War II the United States had a formidable aviation manufacturing industry in terms of facilities, employees and numbers of companies in the business. There were, of course, too many companies to survive on peace-time military and civil aviation sales. Post-war competitors for the trunk airline market were Boeing, Douglas, Lockheed, Martin and Convair. Martin bowed out before the

jet age while Convair suffered the largest loss in corporate history (to that date) on their 880 and 990 program and thus withdrew from the civil aviation field as a prime contractor (they now build the body of the DC-10 for McDonnell Douglas).

The recent wide body jet re-equipment cycle of the airlines pitted the three surviving manufacturers against each other. Lockheed's disastrous cost overruns in producing the Air Force C5-A would have put them into bankruptcy and thus narrowed the field to two manufacturers had not the U.S. government bailed them out with guaranteed loans.

Because the aerospace industry is the top exporter among U.S. manufacturers, because it has a strong political constituency and because it is essential to national defense, the U.S. government is, of course, reluctant to let it flounder. When the next re-equipment cycle begins, it is a near certainty that it cannot support three U.S. manufacturers and possibly one or two European entrants. The question then becomes, which one or possible two, if any, of the U.S. big three will back away? All aircraft manufacturers will be under pressure by the airlines to enter with a new aircraft so the airlines have at least one alternate source of supply and can reap the benefits of common parts inventories when they are already flying the aircraft of a reluctant entrant.

An alternative to the heads on competition of airplane manufacturers has been suggested by various persons in the industry. This would be for the airlines to band together (with government approval) to develop specifications for a new aircraft which could then be subject to bid by the "Big 3" much in the fashion of a military procurement. Assuming that the manufacturers had sufficient information to cost the new aircraft, a reasonable rate of return would be nearly guaranteed with booked sales exceeding the break-even point before a decision to go-ahead was made.

Assuming government approval, the implementation of this scheme would require carrier agreement on aircraft specifications. While certainly this is possible, one can foresee difficulties with each carrier considering his needs unique because of route structure, cabin service requirements, etc.

An alternative to the airlines themselves agreeing to aircraft specifications would be for the U.S. government with airline input to arrive at the design specs. This could be very risky business since the airlines would be free to purchase foreign built aircraft if they did not like the government's design selection.

Without making a judgment on the relative merits of a U.S. airline industry-wide banning together to select a single aircraft design and manufacturer, it is a possibility which could have a substantial impact on the structure of the industry. There might be only one U.S. manufacturer for each class of airline equipment -- short, medium and long-haul. On the other hand, one manufacturer could provide all three classes of aircraft, thus gaining some economies from balancing the work force among different production lines.

### Airline Deregulation

About the only thing upon which proponents, opponents and students of deregulation have in common is that each one defines what is meant by deregulation differently. It is not surprising, therefore, that there is little unanimity on the subject. There are an almost infinite range of possibilities between regulation by the CAB, as practiced today and complete dissolution of the CAB with nothing to take its place. The airlines are vehemently opposed to deregulation as are the highway common carriers in relation to proposals to dismantle the ICC. It appears that the airline industry prefers the protection of the CAB--despite its

occasional pronouncements concerning its desire to really compete without CAB interference. Uncertainty as to what might happen to any given carrier if free-for-all competition were permitted is so great that the industry would rather exist under CAB jurisdiction.

From the point of view of the magnitude and timing of future re-equipment cycles, deregulation (as variously defined) can be described with equal validity as either a beneficial stimulus or a retarding influence on new aircraft sales. The subject invites endless speculation with few, if any, final conclusions. For example, one can argue that many new companies will enter the business, thus creating a huge over-capacity problem. This would be good news to manufacturers whose market will have expanded. One could alternatively argue that there will be only a few new entrants into the industry and that the aircraft they purchase will not compensate for the aircraft sales lost when service or unprofitable low density routes is dropped.

The mere discussion of deregulation has produced a tangible impact. It introduces an uncertainty into the industry; uncertainty about if it will happen and if so, in what form. There is equally great confusion about what its impact might be. This has resulted in hesitancy in the financial community about investing in this industry which could result in some slippage in airline re-equipment plans.

As with most issues of any significance one can take an entirely different view of what deregulation could mean to the NASA aviation R&D program. Those who are opposed to deregulation argue that a period of chaos would follow with overcapacity initially and then bankruptcies. The industry would be brought to its knees for a number of years until

the survivors sorted themselves out into a more rational structure. During this period the aircraft manufacturers would also be in chaos. Very little R&D would be performed by industry and therefore NASA would be the only organization available to insure that the vital work continues so U.S. leadership would be maintained.

Proponents of deregulation would argue that aircraft purchasing would follow a more rational process which could reduce if not eliminate periods of excess capacity followed by reduced profits and losses by the air carriers. Convincing research into this phenomena abounds. The thesis (which is probably correct) says that under CAB regulation the primary competitive weapon is capacity, that is, the number of flights and seats per flight offered in each market. On a route (city pair) served by say two carriers the relationship of capacity offered to market share seems to work as follows: a carrier offering 70 percent of the seat miles would capture around 80 percent of the passenger miles, while the other carrier offering 30 percent of the available seat miles, for example, would get only 20 percent of the traffic. These numbers are illustrative and will, of course, vary, but the central tendency seems to have been validated.<sup>1</sup> To compete one must put on more capacity.

Market share is not the only motivation for buying more aircraft. The return on investment (ROI) permitted by the CAB for carriers is limited to 12 percent. Under these rare but happy situations when air carrier earnings are this high or look as though they might be that high, the carrier can avoid the ROI ceiling by increasing its investment base. The simplest way to do this is buying a few more aircraft.

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<sup>1</sup>See "The Fight for Competitive Advantage: A Study of the United States Domestic Trunk Air Carriers," by William E. Pruhan, Harvard University, 1972.

## Foreign Competition

This refers to competition in aviation technology not airline competition. The U.S. has been the leader in world civil aviation since its infancy. No other nation comes in even as a close second. Nevertheless, in Congress and elsewhere fear is sometimes expressed that our leadership could be imperiled in the future if we fail to advance the state of the art and do not have the monetary and human resources necessary to produce new aircraft. How realistic are these fears and what is the prospect that U.S. aviation preeminence may be lost?

Significant inroads by foreign competition have been made into the Commuter Air Carriers (Part 298) with the Canadair DHC-6 and the Nord 262 of France. Local service and regional carriers operate some British BAC-111's, the F-27 built in the U.S. under license to Fokker and even a few Japanese YS-11's. In the business jet fields there is stiff foreign competition with Dassault (the Falcon sold by Pan American) of France and Hawker-Sidley of Great Britain. In the piston and turbo-prop market all European manufacturers are represented as well as Japan. This contrasts with the trunk airlines and Pan Am which own approximately 1,800 aircraft all of which were built by U.S. manufacturers.

British and French manufacturers singly and in combination have made attempts to penetrate the U.S. trunkline market. The Viscount in the 1950's and the BAC-111 and French Caravelle in the 1960's are examples. None of them, however, made permanent inroads in the sense that the European manufacturers gained a lasting foothold with any U.S. carrier. In other words, the carriers did not look to them for their next generation of aircraft. In the future, the Anglo-French A-300 airbus and the Mercure transport could offer some competition in the medium range category.

Foreign manufacturers are at a tremendous disadvantage vis-a-vis U.S. manufacturers for a variety of reasons. First, the U.S. airline fleet accounts for around two thirds of the total world airline fleet and there is a very understandable bias of U.S. air carriers toward U.S. manufacturers. As long as the U.S. is its own best customer, it is difficult to imagine any serious erosion in U.S. civil aviation leadership. The aircraft market in Europe is not as important as in the U.S. because of the very short distances involved in travel within countries and even between countries.

A second reason for U.S. aviation preeminence is traceable to a variant in the old adage of success breeds success. The fact that the majority of free world scheduled air carrier aircraft are U.S. built means that many overseas carriers gain advantages in spares inventories and training by continuing to buy U.S.

Last, but certainly not least, is the fact that U.S. technology, engineering and production have created the best and most cost effective aircraft in the world. What is rather difficult to sort out is how much of U.S. success is attributable to superior technology versus its ability to get to the market place first with firm orders from U.S. airlines in its pocket. Under these circumstances any foreign competitor would have to have either a significantly superior aircraft or offer very attractive financial terms to expect to compete in any substantial way. One has the impression that the production of a superior aircraft in terms of operating performance and economics alone can no longer explain the success of U.S. manufacturers over their overseas competition. Success is also tied to product planning, financial capabilities, spare parts availability and market timing, and it is in these areas that U.S. manufacturers have been very effective.

If the above interpretation of the factors responsible

for U.S. aviation leadership are correct, then what role can and should R&D play in the future? Clearly, continuing technical leadership is a necessary condition for continuing U.S. aviation preeminence and this must be maintained through a strong and stable R&D investment program. Technical excellence alone, however, will not assure U.S. preeminence. There are a number of distinct trends underway which promise to increase the competition the U.S. can expect from overseas. Nevertheless, in 1976 it is difficult to imagine the U.S. being displaced as the world's number one supplier of civil aircraft. Yet not too many years ago it would have been difficult to imagine Japanese steel and electric products driving out U.S. manufacturers in their home market.

**APPENDICES**

----- U.S. TRUNKS & PAA -----

----- AMERICAN -----

**ECONOMY USA** Strong growth into 1977. Thereafter resumption of secular GNP real growth at 3-4% rate. Inflation rate to be about 5% per year in 1976 and 1977. Thereafter inflation to drop to 3½-4% per year. Unemployment rate to continue slow drop; consumer income and confidence to continue to advance.

**World** Turnaround from recession levels slower than U.S. with inflation rates to continue above USA's.

Ditto

Ditto

		<u>1975-1980</u>	<u>1980-1984</u>
		Growth Rate Compounded "GRC"	
<b>TRAFFIC</b>	Dom RPMs (All Services)	7.5%	6.1%
	Int'l RPMs ( " " )	9.3%	7.4%
<b>CAPACITY</b>	ASMs ad hoc by carrier, but to generally increase at lower rate than RPMs. 1976-1977 and part of 1978's increase mostly due to seating changes and maximum utilization.		
<b>LOAD FACTOR</b>	Ad hoc by carrier; generally increasing between 3 and 4 percentage points.		

		<u>1975-1980</u>	<u>1980-1984</u>
		Growth Rate Compounded "GRC"	
	Dom RPMs (All Services)	7.6%	6.1%
	Int'l RPMs ( " " )	11.2%	7.5%
	System ASMs (All Services)	6.5%	6.2%
<b>LOAD FACTOR</b>	System (All Services) to increase from 58.0% in 1975 to 62.5% by 1984.		

		<u>1976-1984</u>
		"GRC"
<b>COST INCREMENT RATE</b>	Labor (System) (Avg Compens/Empl)	7.7%
	Fuel ( " ) (¢/gal)	5.3%
	Other ( " ) (Industrial Prices)	4.2%
<b>YIELDS</b>	Carriers' need to stay at least even with general inflationary trends, necessitates annual yield increases between 3-5% minimum.	

		<u>1976-1984</u>
		"GRC"
	Labor (System) (Avg Compens/Empl)	7.9%
	Fuel ( " ) (¢/gal)	6.2%
	Other ( " ) (Industrial Prices)	4.4%
	Yields - Dom (¢/RPM)	3.7%
	" - Int'l ( " )	4.3%

**EQUIPMENT** Buys to concentrate on presently available aircraft through 1980. By 1981-1982 new technology aircraft parametered in are:  
 180 seat medium range type  
 200 seat long range type  
 to help with pressing need for fuel economies and to meet the environmental imperative of the late 1970's and early 1980's.

To maintain seat mile range distribution and to allow down-ranging of older type equipment, new buys concentrate on 727-200s, DC-10s and 180 seat medium range type aircraft.

**MONEYABILITY** Cost of Capital - Ad hoc by carrier. Prime lending rate at 8-8.5% with carriers paying between ¼ to 1% above prime.  
Availability of Capital - very restricted until deregulation debate is settled. Funds to come from banks, manufacturers and through leasing. Loans from insurance companies restricted to a very few carriers, due to constrained cash generation and earnings outlook.

Ditto

Reliance on bank credit line, some manufacturers' participation and leasing of aircraft essential due to mediocre earnings and cash generation. No requalification under NY State Insurance Law during study period.

**CAB** Proposals under Aviation Act of 1975 not parametered into study. AERO ADVANCED will be re-done, when and if the various proposals have been enacted and a time frame is established.

Ditto

## C O M M E N T A R Y

### "EARNINGS"

American Airlines' profit picture has brightened considerably after a dismal 1975 performance. RPM growth is expected to exceed the industry's average of 10% thanks to a strong first quarter at UAL's expense, and combined with a 4% increase in yields should produce revenue gains of about 16% over 1975. The expense side of the P/L formula is aided tremendously by the fuel contracts that AAL still has in force. It's April 1976 cost per gallon for domestic fuel was 25.9¢ versus 30.3¢ for TWA and 31.3¢ for UAL. (If American had had to pay UAL's price for fuel, its fuel expense would have increased \$4.8 million for April alone.) Even with unit labor costs up 12% and other costs up 9% on an ASM basis, the fuel contracts keep total operating expenses from increasing more than 13%.

AAL's outlook for 1977 is clouded by the fact that its favorable fuel contracts expire and the carrier will have to pay the then current market price. 1978-1980 look like good years for AAL as earnings increase fourfold, but it should be noted that net earnings reported to stockholders is never more than 2.5% of sales (it was 7.4% in 1966) and the carrier's ROI peaks in 1980 at only 7.5%. Gross interest for the carrier, while declining from 1975-1978, shoots up dramatically starting in 1979 as AAL is forced to finance its new aircraft with much more costly dollars than the cheap long-term insurance money it borrowed in the 1950s and 1960s.

Overall, American's earnings prospects are not that good, especially in light of the 4.5 percentage point gain in load factor that S.H.&E. has parametered into the forecast. Over the period under study revenues grow at a 11.3% growth rate compounded ("GRC") (RPMs 7.3% and yields 3.8%) while operating expenses increase at a 10.9% "GRC" which produces a nine year operating ratio of 97.4%. In order to do better than S.H.&E. has forecast American must accomplish either one or both of the following:

- 1) increase RPMs at a significantly faster rate than the industry. However, it has been losing RPM market share steadily over the last few years.

- 2) increase employee productivity more than the 3.2% "GRC" projected in this study. American's productivity improved at a 4.4% "GRC" in the 1966-1975 period, but since 1970 it has averaged 1.7% "GRC" versus the industry's 3.2%.

N.B. Discount fare changes effective June '76 and a possible additional fare increase of about 2% in September '76, may result in higher domestic yields than parametered into study, increasing net earnings for 1976 by up to \$20 million.

E A R N I N G S

- calendar years -

	Unit	1975 Actual	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976- 1984	
P R O J E C T E D													
<b>Revenues</b>													
Passenger	\$Mil	1534	1779	1991	2228	2470	2747	3035	3350	3682	4037	25319	
Freight		132	153	171	191	212	234	257	283	310	341	2152	
<b>Total Revenues</b>		<u>1795</u>	<u>2078</u>	<u>2332</u>	<u>2610</u>	<u>2893</u>	<u>3215</u>	<u>3550</u>	<u>3920</u>	<u>4310</u>	<u>4730</u>	<u>29638</u>	
<b>Cash Oper Exp</b>													
Labor	"	744	828	914	1016	1113	1241	1389	1549	1729	1924	11703	
Fuel	"	306	341	426	471	517	571	621	677	735	796	5155	
Other	"	668	781	870	956	1054	1172	1295	1428	1569	1716	10841	
<b>Total COE</b>		<u>1718</u>	<u>1950</u>	<u>2210</u>	<u>2443</u>	<u>2684</u>	<u>2984</u>	<u>3305</u>	<u>3654</u>	<u>4033</u>	<u>4436</u>	<u>27699</u>	
Depr/Amort	"	106	108	107	105	115	125	133	143	158	173	1167	
<b>Total Oper Exp</b>		<u>1824</u>	<u>2058</u>	<u>2317</u>	<u>2548</u>	<u>2799</u>	<u>3109</u>	<u>3438</u>	<u>3797</u>	<u>4191</u>	<u>4609</u>	<u>28866</u>	
Oper. Earnings	"	(29)	20	15	62	94	106	112	123	119	121	772	
Gross Interest	"	26	22	21	20	23	30	40	50	59	64	329	
Pre-Tax Earnings	"	(54)	(2)	(6)	42	71	76	72	73	60	57	443	
Inc. Tax	\$Mil	(5)	(2)	(2)	10	18	19	18	18	15	14	108	
Eff. Rate	%	cr	cr	cr	25%	25%	25%	25%	25%	25%	25%	25%	
<b>Net Earnings</b>													
Airline Operations		(49)	-0-	(4)	32	53	57	54	55	45	43	335	
"Nettings"		28	21	24	18	17	23	26	25	25	27	206	
<b>Reptd to Stockholders</b>		<u>(21)</u>	<u>21</u>	<u>20</u>	<u>50</u>	<u>70</u>	<u>80</u>	<u>80</u>	<u>80</u>	<u>70</u>	<u>70</u>	<u>541</u>	
<b>RATIOS</b>													
<b>Traffic (All Services)</b>													
RPMS - DOM	Bil/%Chg	" / "	19.4/ 2	21.4/11	23.0/ 7	24.6/ 7	26.2/ 7	28.0/ 7	29.7/ 6	31.6/ 6	33.6/ 6	35.5/ 6	16.1/6.9 GRC
RPMS - System	" / "	" / "	22.1/ 3	24.7/12	26.6/ 8	28.5/ 7	30.5/ 7	32.6/ 7	34.7/ 6	37.0/ 6	39.3/ 6	41.6/ 6	19.5/7.3 GRC
ASMS - System	" / "	" / "	38.1/ 5	41.1/ 8	43.5/ 6	46.2/ 6	48.8/ 6	52.3/ 7	55.6/ 6	59.2/ 6	62.9/ 6	66.6/ 6	28.5/6.4 GRC
Load Factor - System	%		58.0	60.1	61.2	61.7	62.4	62.3	62.4	62.4	62.4	62.5	4.5
Yield - Dom	¢RPM/%Chg	" / "	7.05/ 1	7.30/4	7.60/4	7.92/ 4	8.22/ 4	8.55/ 4	8.87/ 4	9.17/ 4	9.48/ 3	9.81/ 4	2.76/3.7 GRC
Yield - System	" / "	" / "	6.94/ 2	7.17/ 4	7.49/ 5	7.82/ 4	8.11/ 4	8.43/ 4	8.75/ 4	9.06/ 4	9.37/ 3	9.70/ 4	2.76/3.8 GRC
<b>COST INCREMENT (COE)</b>													
- Labor (Non-Add)	\$Mil/ %	" / "	57/ 8	90/12	74/ 9	76/ 8	74/ 7	77/ 7	93/ 7	102/ 7	114/ 7	124/ 7	824
- Fuel	" / "	" / "	60/25	22/ 7	66/18	27/ 6	25/ 5	22/ 4	23/ 4	26/ 4	29/ 4	30/ 4	270
- Other	" / "	" / "	19/ 3	62/ 9	43/ 5	32/ 4	44/ 4	42/ 4	50/ 4	49/ 3	53/ 4	58/ 3	433
- Total	" / "	" / "	<u>136/11</u>	<u>174/ 9</u>	<u>183/11</u>	<u>135/ 6</u>	<u>143/ 6</u>	<u>141/ 5</u>	<u>166/ 5</u>	<u>177/ 5</u>	<u>196/ 5</u>	<u>212/ 5</u>	<u>1727</u>
Weighted Index (1967=100)	No / %Chg		195/11	213/ 9	237/11	252/ 6	266/ 6	279/ 5	294/ 5	310/ 5	326/ 5	344/ 5	149/6.5 GRC

AERO AD: Earnings 1976-1984

A M E R I C A N

## "FLIGHT EQUIPMENT"

By increasing seating and utilization on its existing fleet and with the addition of the 15 727-200s already on firm order, American will not have to start its massive fleet revamping until 1979.

The 18 additional 727-200s are bought for 1979 and 1980 delivery so that American can start down-ranging some of its older 200s to replace the smaller 727-100s. The DC-10s are needed for American to preserve its ASM/range balance, to replace some 707s, and as a partial solution to the airport congestion problem which could well occur by the early 1980s.

S.H.&E. believes that by 1981 there will be a new 180 seat medium range aircraft which will possess such excellent operating efficiencies that the carriers will buy it even though it has a seat cost of \$100,000 in 1976 dollars. American will use this new plane on routes which have outgrown the 727-200s but are not yet ready for wide-body service, and on routes formerly served by the 707-120Bs.

Some random notes: AAL may not sell as many 707-120Bs by 1980 as S.H.&E. has projected depending upon a resolution of the retrofit question, the prices offered for the planes, and the cost of life improvement work. American could be a definite customer for the Airbus. AAL will probably not buy or lease any used aircraft. Only 32% of AAL's 1976 ASMs are generated by aircraft which meet the environmental standards of FAR part 36.

Even with the \$2.5 billion expenditure for the 105 aircraft that is parametered into this study, 28% of AAL's 1984 ASMs will still be flown by unacceptable aircraft. To replace these aircraft would require approximately another \$1.7 billion.

FLIGHT EQUIPMENT - PURCHASE / REMOVALS / PAYMENTS / LEASES  
GROUND PROPERTY & EQUIPMENT (projected costs)

PURCHASES/LEASES (L)	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
		Actual	- P R O J E C T E D -									
<b>Additions</b>	No. A/C											
727-200		6L	10*L	5*L	-	8	10	-	-	-	-	33
DC10-10		-	-	-	-	5	6	8	6	6	4	35
180 seat M/R		-	-	-	-	-	-	3	12	12	10	37
<b>Total Additions</b>		<u>6</u>	<u>10</u>	<u>5</u>	<u>-</u>	<u>13</u>	<u>16</u>	<u>11</u>	<u>18</u>	<u>18</u>	<u>14</u>	<u>105</u>
<b>Total Cost A/C Type<sup>1/</sup></b>	\$ Mill											
727-200		49	99	52	-	92	120	-	-	-	-	363
DC10-10		-	-	-	-	140	176	247	195	205	143	1106
180 seat M/R		-	-	-	-	-	-	79	318	334	293	1024
<b>Total Cost Aircraft</b>		<u>49</u>	<u>99</u>	<u>52</u>	<u>-</u>	<u>232</u>	<u>296</u>	<u>326</u>	<u>513</u>	<u>539</u>	<u>436</u>	<u>2493</u>
<b>Removals</b>	No A/C											
747Pax-1975 747F-1975&6		2	1									1
707-300F		2										-
727-100			1				1L		5	7	7	21
707-120B		<u>1</u>	<u>3</u>	<u>6</u>	<u>4</u>	<u>2/3L</u>	<u>5</u>	<u>6</u>	<u>6</u>	<u>7</u>	<u>7</u>	<u>49</u>
<b>Total Removals</b>		<u>5</u>	<u>5</u>	<u>6</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>6</u>	<u>11</u>	<u>14</u>	<u>14</u>	<u>71</u>
<b>P A Y M E N T S 4/</b>												
<b>Flight Eq Payments</b>	\$ Mill											
Advance Deposits	"	28	11	35	87	121	140	154	115	90	70	820
Delivery	"	-	-	-	-	93	118	131	205	215	174	940
Spares, Modifs etc	"	17	39	15	33	16	12	15	10	15	16	170
<b>Total Flt Eq Payments</b>	"	<u>45</u>	<u>50</u>	<u>50</u>	<u>120</u>	<u>230</u>	<u>270</u>	<u>300</u>	<u>330</u>	<u>320</u>	<u>260</u>	<u>1930</u>
<b>Total Flt Eq Leases 2/</b>	"	49	100	50	-	70	90	100	150	160	130	850
<b>Total Flight Equipment</b>	"	<u>94</u>	<u>150</u>	<u>100</u>	<u>120</u>	<u>300</u>	<u>360</u>	<u>400</u>	<u>480</u>	<u>480</u>	<u>390</u>	<u>2780</u>
<b>GRD, PROP, &amp; EQUIP 3/</b>	"	<u>28</u>	<u>30</u>	<u>30</u>	<u>30</u>	<u>30</u>	<u>40</u>	<u>40</u>	<u>40</u>	<u>40</u>	<u>50</u>	<u>330</u>

NOTES: (L-Leased, all others 70% purchased)

1/ Cost per Aircraft Type - number x cost per aircraft incl base price + CFE/MC/spares. SH&E derived.

2/ Leases - @ 30% of total aircraft cost per year (1979-1984).

3/ Grd. Prop & Equip. - Subject to management reprogramming.

4/ Payments - (SH&E derived; reflect escalation)

Advance Deposits - pre-delivery @ 30% of unit price.

Delivery - balance remaining @ aircraft acceptance

Spares, Modifs, etc - @ 10% of aircraft cost (or derived)

AERO AD: Flt EQUIP/GPE 1976-1984

A M E R I C A N

## "CAPITAL NEEDS AND SOURCES"

American is facing a financial dilemma starting in 1979. Because its cash generation is not up to the 5 mills norm, AAL will be forced to get more than 50% of its financing from outside sources. Management does not like to use short-term money (bank) to finance aircraft, but due to its inability to qualify under the N.Y. State Insurance Law, AAL will be forced to borrow from the banks. AAL might be able to lease more than the 30% of incoming flight equipment that S.H.&E. has projected from 1979 on, but the recent Treasury Department ruling extending the depreciable lives of aircraft may dampen the enthusiasm of lessors.

S.H.&E. has not projected any equity sales; however if in a strong market with AAL's shares selling at least near book value (at the end of 1975 the shares were at more than a 50% discount from book) then AAL would probably sell stock. The manufacturers of the new 180 seat plane that S.H.&E. has parametered in (see Flight Equipment Schedule) will supply a good deal of the \$140 million in subordinated debt.

American, like all other airlines, faces the problem of under-depreciation of their aircraft. AAL is currently depreciating aircraft whose average cost is less than \$7 million while its replacement costs are much higher. As a result, the depreciation source is only 42% of total flight equipment needs. Proposals to change the Investment Tax Credit so that airlines could use the credit even if they didn't earn it would benefit AAL which has \$75 million in unused ITCs, but there is very little chance of this bill passing Congress.

American decided to lease the 10 727-200s delivered this year and will probably lease the 5 planes due next year because management wants to remain as liquid as possible. With the possibility of "deregulation" hanging over the industry AAL believes it prudent to build up as big a cash position as it can, because they believe that the "rich" carriers would best survive in any deregulated environment. As a result of this policy, AAL will have excess working capital for the next few years. Some of this extra capital may be invested in Howard Corp., a natural resource company, with whom AAL is holding preliminary talks.

S.H.&E. has projected capital expenditures of \$3.1 billion for American over the 1976-1984 period. If these outlays are discounted back to the present at a 5% rate, the present value of these expenses is \$2.45 billion. In the 1967-1975 period AAL's capital expenditures were \$2.13 billion. So, whereas the \$3.1 billion seems like an outrageously large number, when it is put in perspective, AAL's capital needs are more reasonable. If American does have trouble financing its needs it can 1) cut the parametered dividend and save \$70 million - as it is not meeting the 5 mills cash generation norm, stockholders should not expect a dividend and/or 2) cut into working capital that has been kept at 3 weeks of annual cash operating expenses.

It should be noted that AAL's debt retirement schedule is extremely light and well managed compared to some of the other Big 5 carriers.

Recap: 1976-1984

Needs: \$3.70 billion (76% flight equipment, 9% GPE 6% debt retirement).

Sources: \$1.85 billion or 50% from operations (14% earnings, 32% depreciation)  
\$1.74 billion or 47% new financing (\$1.61 billion, or 44% to be arranged).

CAPITAL NEEDS AND SOURCES (\$ MILL)  
- calendar years -

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976- 1984
<u>CAPITAL NEEDS</u>	<u>ACTUAL</u>	<u>P R O J E C T E D</u>									
<u>Flight Equipment Payments</u>											
- Advance Deposits	28	11	35	87	121	140	154	115	90	70	820
- Delivery	-	-	-	-	93	118	131	205	215	174	940
- Spares, Modif. etc.	17	39	15	33	16	12	15	10	15	16	170
Total Flt Equip Payments	45	50	50	120	230	270	300	330	320	260	1930
Add: Flt Equip Leases	49	100	50	-	70	90	100	150	160	130	850
Total Flight Equipment	94	150	100	120	300	360	400	480	480	390	2780
<u>Ground Prop &amp; Eq/Other</u>											
Grd Prop & Equip	28	30	30	30	30	40	40	40	40	50	330
Debt Retirement	28	23	23	23	19	24	24	26	31	51	240
Dividends	-	-	-	-	12	12	12	12	12	12	70
Other	26	17	17	7	9	4	4	2	(3)	(3)	60
Total GPE & Other	82	70	70	60	70	80	60	80	80	110	700
End Wkg Cap (3wks COE proj)	109	160	180	160	160	170	190	210	220	220	220
<b>TOTAL CAPITAL NEEDS</b>	<b>285</b>	<b>380</b>	<b>350</b>	<b>340</b>	<b>530</b>	<b>610</b>	<b>670</b>	<b>770</b>	<b>780</b>	<b>720</b>	<b>3700</b>
<u>CAPITAL SOURCES</u>											
<u>Beginning Working Capital Operations</u>	48	109	160	180	160	160	170	190	210	220	110
- Net Earnings (Rept'd)	(21)	21	20	50	70	80	80	80	70	70	540
- Depreciation/Amort	106	108	107	105	115	125	133	143	158	173	1170
- Property Sale/Other	60	25	13	9	5	10	12	10	9	9	100
- Other	(1)	(13)	(10)	(4)	-	5	15	17	13	18	40
Total Operations	144	141	130	160	190	220	240	250	250	270	1850
<u>Financing Arrangements</u>											
- Senior Debt-Banks	-	-	-	-	90	70	80	80	80	-	400
- " " -Insko/Others	-	-	-	-	-	-	-	-	30	60	90
- Subord Debt	-	-	-	-	-	40	50	50	-	-	140
- Leases (Cap @ AC Cost)	49	100	50	-	70	90	100	150	160	130	850
- Deposits returnable	44	30	10	-	20	30	30	50	50	40	260
- Stock Sales	-	-	-	-	-	-	-	-	-	-	-
Tot Financing Arrangements	93	130	60	-	180	230	260	330	320	230	1740
<b>TOTAL CAPITAL SOURCES</b>	<b>285</b>	<b>380</b>	<b>350</b>	<b>340</b>	<b>530</b>	<b>610</b>	<b>670</b>	<b>770</b>	<b>780</b>	<b>720</b>	<b>3700</b>
<b>FINANCING TO BE ARRANGED</b>	<b>-</b>	<b>-</b>	<b>60</b>	<b>-</b>	<b>180</b>	<b>230</b>	<b>260</b>	<b>330</b>	<b>320</b>	<b>230</b>	<b>1610</b>

AERO AD: CAPITAL NEEDS & SOURCES 1976-1984

A M E R I C A N

### "Moneyability"

This schedule clearly reflects the mediocre performance that S.H.&E. has forecast for American. The crucial cash generation ratio is never above 5 mills which means that AAL must rely heavily on outside financing sources as the carrier does not produce enough cash from its operations.

The two debt/equity ratios don't change very much over the 9 year period as AAL is forced to bring on debt at a 3 to 1 ratio to its earnings. American never meets the N.Y. State Insurance Law fixed charge coverage ratio of 1.5 x for unsecured loans, which reduces its financing options. (see Capital Needs and Sources schedule).

As a result of AAL's operating ratio never falling below 97%, the ROI for the carrier is never higher than 7.5% which is considerably below the CAB's 12% standard. AAL's revenue per dollar of invested capital rises smartly in the 1976-1978 period but then flattens out as the massive investment in new aircraft swells the investment base.

American's \$200 million bank credit expires early in 1977. Taking into account the failure of AAL to qualify for insurance money, its acceptable D/E ratios, and its rather unspectacular earnings outlook, S.H.&E. believes that AAL will arrange for a larger credit but that it will have to accept the costlier terms asked for by the banks.

MONEYABILITY - INVESTED CAPITAL  
(System - All Services)

		1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
	UNIT	Actual	P R O J E C T E D									
<b>INVESTED CAPITAL</b>												
Debt	\$ Mil											
Senior Debt - Banks	"	-	-	-	-	90	160	240	320	400	380	380
Senior Debt-Insco/Other	"	302	279	256	234	215	199	183	166	183	229	(73)
Senior Debt-Leases Cap'd	"	431	486	490	441	458	490	526	608	689	736	305
Senior Total - Reptd	"	302	279	256	234	305	359	423	486	583	609	307
Senior Total + Cap Lses	"	733	765	746	675	763	849	949	1094	1272	1345	612
Subordinated	"	172	172	172	172	172	204	246	287	269	252	80
Total Debt - Reptd	"	474	452	429	406	477	563	669	773	852	861	387
Total Debt + Cap Lses	"	905	937	918	847	935	1053	1195	1381	1541	1597	692
<b>Equity</b>												
Stock	"	542	563	583	633	691	759	827	895	953	1011	469
Stock + Sub Debt	"	714	735	755	805	863	963	1073	1182	1222	1263	549
Tot Inv Capital-Reptd	"	1016	1015	1012	1039	1168	1322	1496	1668	1805	1872	856
Tot Inv Capital + Cap Lses	"	1447	1500	1501	1480	1626	1812	2022	2276	2494	2608	1161
<b>FLIGHT EQUIPMENT</b>												
Depr Cost	"	739	664	590	539	613	721	844	1090	1340	1505	766
Depr Cost + Mfr Deposit	"	766	673	618	654	779	938	1117	1325	1503	1607	841
Depr Cost + " + Cap Lses	"	1197	1159	1108	1095	1237	1428	1643	1933	2192	2343	1146
<b>WORKING CAPITAL</b>												
Incl Cur Debt/Equiv Wks COE	\$Mill/Wks	109/ 3	160/ 4	180/ 4	160/ 3	160/ 3	170/ 3	190/ 3	210/ 3	220/ 3	220/ 3	111/ -
<b>RATIO ANALYSIS<sup>1/</sup> (G) UNIT/NORM</b>												
Sr Debt ÷ Equity (Stk + Sub)	%-150%	103	104	99	84	88	88	88	93	104	106	3pts.
Sr Debt ÷ FI Eq (Net + Dep + Lse)	%- 80%	61	66	67	62	62	59	58	57	58	57	(4)pts.
Cap Lses Share Flt Eq	%- 33%	36	42	44	40	37	34	32	31	31	31	(5)pts.
Total Debt ÷ Stock Equity	%-175%	167	166	157	134	135	139	145	154	162	158	(9)pts.
<b>N Y State Ins Law</b>												
Fix Chg Cov - 12 Mos	x-1.5	0.6	1.0	1.0	1.3	1.4	1.4	1.4	1.3	1.2	1.2	0.6x
Fix Chg Cov - 5 yr Avg	x-1.5	0.8	0.8	0.8	1.0	1.0	1.2	1.3	1.4	1.4	1.3	0.5x
Oper Ratio (Airline)	%	102	99	99	98	97	97	97	97	97	97	(5)pts.
Return On Inv (Corp)	%	1.6	4.2	4.2	6.3	7.2	7.5	7.4	7.2	6.7	6.7	5.1pts.
Rev ÷ Tot Inv Cap	\$	1.24	1.39	1.56	1.77	1.79	1.78	1.76	1.73	1.73	1.82	0.58
Net Cap Comts	\$ Mil	186	280	480	730	840	960	1040	960	880	800	-
Fin Argd / % Argd	"/%	200/108	200/71	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
<b>Cash Generation</b>												
Flow per \$ Equity	¢/% Chg-30	8/(56)	15/88	14/(7)	17/21	20/18	19/(5)	18/(5)	17/(6)	17/-	17/-	9/113
Rev Less COE	Mills/% Chg-5.00	2.02/(55)	3.11/54	2.80/(10)	3.61/29	4.28/19	4.42/ 3	4.41/-	4.49/ 2	4.40/(2)	4.41/-	2.39/118

Moneyability  
AERO: Inv. Capital 1976-1984

Note: (G) See Glossary.

<sup>1/</sup> 12 months basis. % Changes are from end of prior year.

A M E R I C A N

P A R A M E T E R S

- U.S. TRUNKS & PAA -

- BRANIFF

**ECONOMY USA** Strong growth into 1977. Thereafter resumption of secular GNP real growth at 3-4% rate. Inflation rate to be about 5% per year in 1976 and 1977. Thereafter inflation to drop to 3 1/2-4% per year. Unemployment rate to continue slow drop; consumer income and confidence to continue to advance.

**World** Turnaround from recession levels slower than U.S. with inflation rates to continue above USA's.

Ditto

Ditto

		<u>1975-1980</u>	<u>1980-1984</u>
		Growth Rate	Compounded "GRC"
<b>TRAFFIC</b>	Dom RPMs (All Services)	7.5%	6.1%
	Int'l RPMs ( " " )	9.3%	7.4%
<b>CAPACITY</b>	ASMs ad hoc by carrier, but to generally increase at a lower rate than RPMs. 1976-1977 and part of 1978's increase mostly due to seating changes and maximum utilization.		
<b>LOAD FACTOR</b>	Ad hoc by carrier; generally increasing between 3 and 4 percentage points.		

		<u>1975-1980</u>	<u>1980-1984</u>
		Growth Rate	Compounded "GRC"
Dom RPMs (All Services)		7.5%	5.9%
Int'l RPMs ( " " )		8.6%	7.7%
System ASMs (All Services)		5.8%	5.4%

LOAD FACTOR System (All Services) to increase from 50.1% in 1975 to 57.0% by 1984.

		<u>1976-1984</u>
		"GRC"
<b>COST</b>	Labor (System) (Avg Compens/Empl)	7.7%
<b>INCREMENT</b>	Fuel ( " ) (¢ gal)	5.3%
<b>RATE</b>	Other ( " ) (Industrial Prices)	4.2%
<b>YIELDS</b>	Carriers' need to stay at least even with general inflationary trends, necessitates annual yield increases between 3-5% minimum.	

		<u>1976-1984</u>
		"GRC"
Labor (System) (Avg Compens/Empl)		8.1%
Fuel ( " ) (¢ gal)		7.1%
Other ( " ) (Industrial Prices)		4.2%
Yields - Dom (¢/RPM)		4.1%
" - Int'l ( " )		4.0%

**EQUIPMENT** Buys to concentrate on presently available aircraft through 1980. By 1981-1982 new technology aircraft parametered in are:  
 180 seat medium range type  
 200 seat long range type  
 to help with pressing need for fuel economies and to meet the environmental imperative of the late 1970's and early 1980's.

Buys concentrate on 727-200s and 180 seat M/R type to allow for continued phase-out of 727-100s and management's very successful flight frequency philosophy. Widebody type DC-10/L-1011 long range aircraft parametered in from 1978 on for growth in Hawaiian and South American markets.

**MONEYABILITY** Cost of Capital - Ad hoc by carrier. Prime lending rate at 8-8.5% with carriers paying between 1/2 and 1 percent above prime.  
Availability of Capital - very restricted until deregulation debate is settled. Funds to come from banks, manufacturers and through leasing. Loans from insurance companies restricted to a very few carriers, due to constrained cash generation and earnings outlook.

Ditto

With consistently improving earnings, Braniff will have no problems financing its needs. Carrier qualifies for loans under NYS insurance law in all the years under study. No flight equipment leases parametered in - but this option is open to Braniff as an additional route to financing, especially if carrier has to re-equip at faster rate to meet environmental requirements of the early 1980's.

**CAB** Proposals under Aviation Act of 1975 not parametered into study. AERO ADVANCED will be re-done, when and if the various proposals have been enacted and a time frame is established.

Ditto

## C O M M E N T A R Y

### "EARNINGS"

Braniff is doing a good job of combating the 17% rise in unit costs that it faces in 1976. Operating income was down slightly for the first six months, but should end the year slightly above 1975's figure.

The major culprit for the large cost hike is fuel, with labor coming in a distant second. Braniff's fuel contracts, which helped make 1975's earnings look very good compared to the rest of the industry's dismal performance, expired at the end of last year. This year BIA is expected to pay an average of 32.3¢/gal which is 28% higher than 1975's cost. Earlier this year Braniff settled most of its labor contracts which will result in a 13% increase in unit labor costs for 1976. Overall, higher unit costs account for \$64 million of the projected \$76 million rise in cash operating expenses for this year.

Strong traffic growth combined with modest capacity increases will raise the airline's 1976 load factor 2.1 pts. over last year's 50.1%. So, whereas Braniff's break-even load factor will be up considerably this year, the profit spread (actual load factor vs break-even load factor) will remain one of the highest in the industry.

Last year BIA experienced negative "Nettings" as the carrier took a \$4.3 million charge for an accounting change, and suffered large foreign currency losses in South America. With the charge being a one-time item, the currency problem abating (\$22 M gain in 2Q 76 vs \$644 M loss in 2Q 75), and capital gains increased due to more aircraft sales, BIA should end the year with positive "Nettings".

The longer term earnings outlook is good but not spectacular. Braniff's RPM growth should outpace the industry's because of the airline's flight frequency philosophy and its position in the growing Sun Belt. The projected 1.5% spread between the RPM and ASM compound growth rates will increase BIA's load factor up to 57% by 1984. Hindering Braniff's longer-term performance is its reliance on narrow-bodied aircraft. In 1975 BIA used .0301 gallons of fuel per ASM and in 1984 it will still be using .0274 according to our projections. This 9% improvement is considerably less than most of the other carriers will experience. BIA will also not be getting the same productivity improvements that its competitors will be receiving.

Nonetheless, Braniff will be earning 4.5% on its revenues between 1976 and 1984, which is way above the industry norm. It should be noted, however, that BIA's profit margin peaks at 5.0% in 1983 (vs. 9.2% in 1966) and the carrier never earns the CAB's 12% standard as it did in 1974.

"EARNINGS"

E A R N I N G S  
- calendar years -

Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984		
	Actual	----- P r o j e c t e d -----											
<b>Revenues</b>													
Passenger	\$Mil	522	601	679	760	847	941	1043	1148	1264	1387	8670	
Freight		31	35	40	45	50	55	61	67	73	81	507	
<b>Total Revenues</b>	"	<u>595</u>	<u>677</u>	<u>770</u>	<u>861</u>	<u>954</u>	<u>1060</u>	<u>1170</u>	<u>1290</u>	<u>1415</u>	<u>1550</u>	<u>9747</u>	
<b>Cash Oper Exp</b>													
Labor	"	198	219	253	283	314	352	392	437	481	541	3272	
Fuel	"	102	136	156	172	186	202	219	236	254	279	1840	
Other	"	216	236	268	297	324	357	392	428	465	508	3275	
<b>Total COE</b>	"	<u>515</u>	<u>591</u>	<u>677</u>	<u>752</u>	<u>824</u>	<u>911</u>	<u>1003</u>	<u>1101</u>	<u>1200</u>	<u>1328</u>	<u>8387</u>	
Depr/Amort	"	34	36	40	44	49	54	61	71	79	89	523	
<b>Total Oper Exp</b>	"	<u>549</u>	<u>627</u>	<u>717</u>	<u>796</u>	<u>873</u>	<u>965</u>	<u>1064</u>	<u>1172</u>	<u>1279</u>	<u>1417</u>	<u>8910</u>	
<b>Oper. Earnings</b>	"	<u>45</u>	<u>50</u>	<u>53</u>	<u>65</u>	<u>81</u>	<u>95</u>	<u>106</u>	<u>118</u>	<u>136</u>	<u>133</u>	<u>837</u>	
Gross Interest	"	18	20	22	25	29	33	37	40	45	47	298	
<b>Pre-Tax Earnings</b>	"	<u>27</u>	<u>30</u>	<u>31</u>	<u>40</u>	<u>52</u>	<u>62</u>	<u>69</u>	<u>78</u>	<u>91</u>	<u>86</u>	<u>539</u>	
Inc. Tax	\$Mil	6	8	6	8	10	15	17	20	23	21	128	
<b>Eff. Rate</b>	%	<u>23%</u>	<u>25%</u>	<u>20%</u>	<u>20%</u>	<u>20%</u>	<u>25%</u>	<u>25%</u>	<u>25%</u>	<u>25%</u>	<u>25%</u>	<u>24%</u>	
<b>Net Earnings</b>													
Airline Operations	\$Mil	21	22	25	32	42	47	52	58	68	65	411	
"Nettings"	"	(5)	3	5	3	3	3	2	2	2	5	29	
<b>Reptd to Stockholders</b>	"	<u>16</u>	<u>25</u>	<u>30</u>	<u>35</u>	<u>45</u>	<u>50</u>	<u>55</u>	<u>60</u>	<u>70</u>	<u>70</u>	<u>440</u>	
<b>RATIOS</b>													
<b>Traffic (All Services)</b>													
RPMS - DOM	Bil/%Chg	" / "	5.03/5	5.58/11	5.98/7	6.36/7	6.79/7	7.22/7	7.66/6	8.11/6	8.60/6	9.07/6	4.04/6.8 GRC
RPMS - System	" / "	" / "	6.61/2	7.25/10	7.83/8	8.39/7	9.00/7	9.62/7	10.3/7	10.9/6	11.6/6	12.3/6	5.69/7.1 GRC
ASMS - System	" / "	" / "	13.2/4	13.9/5	14.9/7	15.7/5	16.5/5	17.5/6	18.5/6	19.5/5	20.5/5	21.6/5	8.40/5.6 GRC
Load Factor - System	%		50.1	52.2	52.6	53.5	54.5	55.0	55.5	56.0	56.5	57.0	6.9 pts.
Yield - Dom	¢RPM/%Chg	" / "	8.03/5	8.43/5	8.85/5	9.24/4	9.61/4	10.0/4	10.4/4	10.7/3	11.1/4	11.5/4	3.49/4.1 GRC
Yield - System	" / "	" / "	7.89/7	8.29/5	8.68/5	9.05/4	9.41/4	9.78/4	10.2/4	10.5/3	10.9/4	11.3/4	3.39/4.1 GRC
<b>COST INCREMENT (COE)</b>													
- Labor (Non-Add)	\$Mil/ %	" / "	17/10	25/13	23/10	21/8	21/7	22/7	26/7	30/7	31/7	36/7	235
- Fuel	" / "	" / "	12/13	30/28	10/7	9/6	9/5	8/4	9/4	9/4	9/4	11/4	104
- Other	" / "	" / "	18/9	9/4	15/6	14/5	12/4	14/4	15/4	15/3	16/4	18/3	128
- Total	" / "	" / "	<u>46/10</u>	<u>64/17</u>	<u>48/8</u>	<u>44/6</u>	<u>42/6</u>	<u>44/5</u>	<u>50/5</u>	<u>54/5</u>	<u>56/5</u>	<u>65/6</u>	<u>467</u>
<b>Weighted Index (1967=100)</b>	No / %Chg	" / "	<u>192/10</u>	<u>224/17</u>	<u>242/8</u>	<u>258/6</u>	<u>272/6</u>	<u>286/5</u>	<u>301/5</u>	<u>317/5</u>	<u>334/5</u>	<u>353/6</u>	<u>161/7.0 GRC</u>

AERO AD: EARNINGS 1976 - 1984

B R A N I F F

## C O M M E N T A R Y

### "FLIGHT EQUIPMENT"

Braniff's fleet mix has been one of the major reasons behind the carrier's above average performance during the last few years. The 727, DC8 and 747 are all ideally suited for Braniff's route structure. On a cost per available seat mile basis, BIA's fleet is one of the most efficient in the industry.

The airline is now in Phase II of its equipment program. It is replacing its older 727-100/QC aircraft with larger, more economical, 727-200s. Phase III of Braniff's program will entail introducing wide-bodied trijets into its fleet. The long-range DC-10 or L-1011s will be used on South American routes which have outgrown the presently flown DC8s, and as a back-up for the carrier's sole 747. There is the possibility that BIA could buy some used DC8-60s instead of purchasing new trijets, but we consider the chances of this happening as fairly remote.

We do expect that BIA will purchase the 7 DC8-62s and the 5 727-200s when their leases expire. Because Braniff is so heavily dependent on the businessman, around 70% of its traffic, we have kept the 727-200s with 128 seats so the carrier does not have to remove profitable first class space. If, however, Braniff should increase seating on the 727-200s from the current 128 to 137, fewer additional advanced 727-200s would have to be bought.

Our study projects that in 1984 Braniff will be flying over 6 billion ASMs with aircraft not meeting FAR Part 36 restrictions. The great majority of this total is accounted for by older 727-200s. To completely replace this capacity with new aircraft would cost Braniff about \$650 million in 1984 dollars.

"FLIGHT EQUIPMENT"

FLIGHT EQUIPMENT - PURCHASE / REMOVALS / PAYMENTS / LEASES  
GROUND PROPERTY & EQUIPMENT (projected costs)

PURCHASES/LEASES (L)	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-
		Actual	- - - P R O J E C T E D - - -									
<b>Additions</b>	<b>No. A/C</b>											
727-200		7	8*	4*	4	4	8	-	-	-	-	28
DC-10/L-1011 Type L/R		-	-	-	1	2	-	2	-	-	3	8
180 Seat M/R		-	-	-	-	-	-	4	5	6	1	16
<b>Total Additions</b>		<u>7</u>	<u>8</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>8</u>	<u>6</u>	<u>5</u>	<u>6</u>	<u>4</u>	<u>52</u>
<b>Total Cost A/C Type<sup>1/</sup></b>	<b>\$ Mill</b>											
727-200		56	77	42	44	46	96	-	-	-	-	305
DC-10/L-1011 Type L/R		-	-	-	29	61	-	67	-	-	117	274
180 Seat M/R		-	-	-	-	-	-	106	133	167	29	435
<b>Total Cost Aircraft</b>		<u>56</u>	<u>77</u>	<u>42</u>	<u>73</u>	<u>107</u>	<u>96</u>	<u>173</u>	<u>133</u>	<u>167</u>	<u>146</u>	<u>1014</u>
<b>Removals</b>	<b>No A/C</b>											
727-100/QC		5	5	1	5	5	5	4/1L	1/5L	-	-	32
DC8-62		-	-	-	-	-	-	-	-	-	4	4
DC8-51		-	-	-	2	2	-	-	-	-	-	4
<b>Total Removals</b>		<u>5</u>	<u>5</u>	<u>1</u>	<u>7</u>	<u>7</u>	<u>5</u>	<u>5</u>	<u>6</u>	<u>-</u>	<u>4</u>	<u>40</u>
<b>PAYMENTS 4/</b>												
<b>Flight Eq Payments</b>	<b>\$ Mill</b>											
Advance Deposits	"	13	14	29	43	49	56	32	35	40	40	338
Delivery	"	39	60	29	51	75	67	121	93	117	101	714
Spares, Modifs etc	"	2	6	2	6	6	7	7	12	13	9	68
<b>Total Flt Eq Payments</b>	"	<u>54</u>	<u>80</u>	<u>60</u>	<u>100</u>	<u>130</u>	<u>130</u>	<u>160</u>	<u>140</u>	<u>170</u>	<u>150</u>	<u>1120</u>
<b>Total Flt Eq Leases 2/</b>	"	-	-	-	-	-	-	-	-	-	-	-
<b>Total Flight Equipment</b>	"	<u>54</u>	<u>80</u>	<u>60</u>	<u>100</u>	<u>130</u>	<u>130</u>	<u>160</u>	<u>140</u>	<u>170</u>	<u>150</u>	<u>1120</u>
<b>GRD, PROP, &amp; EQUIP 3/</b>	"	<u>11</u>	<u>15</u>	<u>15</u>	<u>20</u>	<u>20</u>	<u>20</u>	<u>20</u>	<u>30</u>	<u>30</u>	<u>30</u>	<u>200</u>

NOTES: (L=Leased, all others 70% purchased) L/R= Long range; M/R = Medium range.

1/ Cost per Aircraft Type - number x cost per aircraft incl base price + CFE/MC/spares. SH&E derived.

2/ Leases - None.

3/ Grd. Prop & Equip. - Subject to management reprogramming.

4/ Payments - (SH&E derived; reflect escalation)

Advance Deposits - pre-delivery @ 30% of unit price.

Delivery - balance remaining @ aircraft acceptance

Spares, Modifs, etc - @ 10% of aircraft cost (or derived)

\* Firm order.

AERO AD: FLT. EQ/GPE 1976-1984

B R A N I F F

C O M M E N T A R Y

"CAPITAL NEEDS AND SOURCES"

Braniff should have no problem in meeting its financing needs throughout the study period. A strong earnings and cash flow outlook will allow the airline to take on over \$600 million in new debt between 1976 and 1984 and retire \$300 million of old debt.

Earlier this year BIA issued \$50 million of senior notes and used the proceeds to reduce its bank revolver. However, the carrier will have to borrow again from the bank to pay for the 727-200s to be delivered later this year. The wash transaction of debt retirement and new bank debt for 1976 is not shown on the accompanying table. Braniff is able to meet all of its present 1977 needs with internally generated funds. The \$20 million to be borrowed from the banks is for advance deposits on SH&E parametered aircraft buys starting in 1978.

BIA's management has stated that it would prefer to buy rather than lease new aircraft. If the carrier is forced to replace its environmentally unacceptable planes at a faster rate than we have projected, BIA's resources would be pinched. But with the leasing option available, Braniff would still be able to meet its expanded capital needs.

When Braniff's future capital expenditures on flight equipment and GPE of \$1.32 billion are discounted at a 5% rate, the present value of these outlays is \$1.06 billion. This is considerably higher than the approximately \$770 million Braniff spent during the past nine years. It is fortunate that BIA is now in such a healthy position and that its outlook continues to be promising.

Recap: 1976-1984:

Needs: \$1.785 billion (63% flight equipment, 11% GPE, 17% debt retirement).

Sources: \$1.085 billion or 61% from operations (25% earnings, 29% depreciation).  
\$665 million or 37% new financing (\$580 million, or 32% to be arranged).

CAPITAL NEEDS AND SOURCES (\$ MILL)  
- calendar years -

CAPITAL NEEDS	1975 ACTUAL	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976- 1984
	P R O J E C T E D										
<u>Flight Equipment Payments</u>											
- Advance Deposits	13	14	29	43	49	56	32	35	40	40	340
- Delivery	39	60	29	51	75	67	121	93	117	101	710
- Spares, Modif. etc.	2	6	2	6	6	7	7	12	13	9	70
Total Flt Equip Payments	54	80	60	100	130	130	160	140	170	150	1120
Add: Flt Equip Leases	-	-	-	-	-	-	-	-	-	-	-
Total Flight Equipment	54	80	60	100	130	130	160	140	170	150	1120
<u>Ground Prop &amp; Eq/Other</u>											
Grd Prop & Equip	11	15	15	20	20	20	20	30	30	30	200
Debt Retirement	34	20	19	26	41	43	41	15+20	19+15	23+20	300
Dividends	4	4	5	7	9	9	9	10	12	12	80
Other	3	1	1	2	-	3	-	-	4	-	10
Total GPE & Other	52	40	40	55	70	75	70	75	80	85	590
End Wkg Cap (3wks COE proj)	34	40	40	45	50	55	60	65	70	75	75
<b>TOTAL CAPITAL NEEDS</b>	<b>140</b>	<b>160</b>	<b>140</b>	<b>200</b>	<b>250</b>	<b>260</b>	<b>290</b>	<b>280</b>	<b>320</b>	<b>310</b>	<b>1785</b>
<u>CAPITAL SOURCES</u>											
<u>Beginning Working Capital Operations</u>	36	34	40	40	45	50	55	60	65	70	35
- Net Earnings (Rept'd)	16	25	30	35	45	50	55	60	70	70	440
- Depreciation/Amort	34	36	40	44	49	54	61	71	79	89	520
- Property Sale/Other	8	15	10	16	16	16	9	9	11	21	125
- Other	5	-	-	-	-	-	-	-	-	-	-
Total Operations	63	76	80	95	110	120	125	140	160	180	1085
<u>Financing Arrangements</u>											
- Senior De: -Banks	39	-	20	15	35	40	60	60	35	60	325
- " " -Insko/Others	2	50	-	50	-	50	-	-	60	-	210
- Subord Debt	-	-	-	-	60	-	20	20	-	-	100
- Leases (Cap @ AC Cost)	-	-	-	-	-	-	-	-	-	-	-
- Deposits returnable	-	-	-	-	-	-	-	-	-	-	-
- Stock Sales	-	-	-	-	-	-	30	-	-	-	30
Tot Financing Arrangements	41	50	20	65	95	90	110	80	95	60	665
<b>TOTAL CAPITAL SOURCES</b>	<b>140</b>	<b>160</b>	<b>140</b>	<b>200</b>	<b>250</b>	<b>260</b>	<b>290</b>	<b>280</b>	<b>320</b>	<b>310</b>	<b>1785</b>
<b>FINANCING TO BE ARRANGED</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>50</b>	<b>95</b>	<b>90</b>	<b>110</b>	<b>80</b>	<b>95</b>	<b>60</b>	<b>580</b>

AERO AD: CAPITAL NEEDS & SOURCES 1976-1984

B R A N I F F

## C O M M E N T A R Y

### "MONEYABILITY"

Braniff's balance sheet growth should outpace any of the Big Five carriers in the 1976-1984 period. Braniff is the only carrier whose book value of flight equipment will more than double during the nine year span. BIA is also the only one of the six whose invested capital base will increase more than 100%.

Braniff's cash flow is the key to the carrier's being able to meet the relatively large capital needs it faces. With the crucial cash generation ratio well above the 5 mills norm, BIA will be able to finance from operations almost 60% of its needs. Because of its solid cash flow, BIA will have to bring on only 70¢ of debt for every additional dollar of equity earned during the study period. This, of course, will lead to a decline in BIA's "Moneyability" ratios which is shown on the accompanying chart.

Braniff's management has expressed a desire not to lease any new aircraft. With its Sr. D/E ratio comfortably below the 150% ceiling BIA should have no problem getting all the senior money it needs from the banks and other senior sources. The airline qualifies under the N.Y. State Insurance Law this year, and after the deregulation debate is settled, could borrow some long-term money from the insurance companies.

Braniff's recent public issue of \$50 million of senior notes (the first such airline offering since 1972) will be used to reduce its bank revolver. However, BIA will have to draw down from its bank credit later this year to help finance the remaining 727-200s being added to the fleet.

It should be noted that BIA's operating ratio never falls below 1974's 90%, and the company's ROI peaks at 11.2% vs 1974's 12.8%. The revenue to total invested capital ratio does not increase that much because of the tremendous increase in Braniff's investment base.

Because all avenues of financing are available, and its own solid moneyability posture, Braniff would be able to meet the increased financing requirements which would occur if the carrier were forced to speed up its fleet revamping to meet tighter environmental restrictions.

MONEYABILITY - INVESTED CAPITAL  
(System - All Services)

	UNIT	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
		Actual	P R O J E C T E D									
<b>INVESTED CAPITAL</b>												
<b>Debt</b>	\$ Mil											
Senior Debt - Banks	"	136	128	140	142	149	160	189	221	225	265	129
Senior Debt-Insco/Other	"	59	102	95	138	131	174	167	163	224	205	146
Senior Debt-Leases Cap'd	"	86	76	66	56	47	38	29	21	13	5	(81)
Senior Total - Reptd	"	195	230	235	280	280	334	356	384	449	470	275
Senior Total + Cap Lses	"	281	306	301	336	327	372	385	405	462	475	194
Subordinated	"	59	55	51	44	98	92	108	125	121	117	58
Total Debt - Reptd	"	254	285	286	324	378	426	464	509	570	587	333
Total Debt + Cap Lses	"	340	361	352	380	425	464	493	530	583	592	252
<b>Equity</b>												
Stock	"	167	188	213	241	277	318	364	414	472	530	363
Stock + Sub Debt	"	226	243	264	285	375	410	472	539	593	647	421
Tot Inv Capital-Reptd	"	421	473	499	565	655	744	828	923	1042	1117	696
Tot Inv Capital + Cap Lses	"	507	549	565	621	702	782	857	944	1055	1122	615
<b>FLIGHT EQUIPMENT</b>												
Depr Cost	"	335	362	369	395	454	500	618	691	791	861	526
Depr Cost + Mfr Deposit	"	345	369	392	439	515	591	689	757	847	913	568
Depr Cost + " + Cap Lses	"	431	445	458	495	562	629	718	778	860	918	487
<b>WORKING CAPITAL</b>												
Incl Cur Debt/Equiv Wks COE	\$Mill/Wks	34/3	40/4	40/3	45/3	50/3	55/3	60/3	65/3	70/3	75/3	41/-
<b>RATIO ANALYSIS<sup>1/</sup> (G) UNIT/NORM</b>												
Sr Debt ÷ Equity (Stk + Sub)	%-150%	124	126	114	118	87	91	82	75	78	73	(51) pts.
Sr Debt ÷ Fl Eq (Net + Dep + Lse)	%- 80%	65	69	66	68	58	59	54	52	54	52	(13) pts.
Cap Lses Share Flt Eq	%- 33%	20	17	14	11	8	6	4	3	2	1	(19) pts.
Total Debt ÷ Stock Equity	%-175%	204	192	165	158	153	146	135	128	124	111	(93) pts.
<b>N Y State Ins Law</b>												
Fix Chg Cov - 12 Mos	x-1.5	1.5	1.6	1.6	1.7	1.8	2.0	2.0	2.1	2.2	2.2	0.7x
Fix Chg Cov - 5 yr Avg	x-1.5	1.4	1.5	1.6	1.6	1.6	1.7	1.8	1.9	2.0	2.1	0.7x
Oper Ratio (Airline)	%	92	93	93	93	92	91	91	91	90	91	(1) pt.
Return On Inv (Corp)	%	7.8	9.1	10.1	10.5	11.2	11.1	11.1	10.8	11.1	10.5	2.7 pts.
Rev ÷ Tot Inv Cap	\$	1.17	1.23	1.36	1.39	1.36	1.36	1.37	1.37	1.34	1.38	0.21¢
Net Cap Comts <sup>2/</sup>	\$ Mil	82	195	270	300	330	350	370	380	360	350	-
Fin Argd / % Argd	"/%	17/21	33/17	13/5	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
<b>Cash Generation</b>												
Flow per \$ Equity	¢/% Chg-30	24/(4)	24/-	25/4	27/8	24/(11)	25/4	24/(4)	24/-	25/4	24/(4)	-/-
Rev Less COE per ASM	Mills/% Chg-5.00	6.04/(13)	6.19/2	6.24/1	6.94/11	7.88/14	8.51/8	9.03/6	9.69/7	10.49/8	10.28/(2)	4.24/70

Note: (G) See Glossary.

Moneyability  
AERO AD: Inv. Capital 1976-1984

<sup>1/</sup> 12 months basis. % Changes are from end of prior year.  
<sup>2/</sup> Net Cap Comts = Next two years projected capital expenditures for flight equipment and GPE.

B R A N I F F

P A R A M E T E R S

- U.S. TRUNKS & PAA -

-CONTINENTAL-

**ECONOMY USA** Strong growth into 1977. Thereafter resumption of secular GNP real growth at 3-4% rate. Inflation rate to be about 5% per year in 1976 and 1977. Thereafter inflation to drop to 3½-4% per year. Unemployment rate to continue slow drop; consumer income and confidence to continue to advance.

**World** Turnaround from recession levels slower than U.S. with inflation rates to continue above USA's.

DITTO  
  
DITTO

		<u>1975-1980</u>	<u>1980-1984</u>
		<u>Growth Rate Compounded "GRC"</u>	
<b>TRAFFIC</b>	Dom RPMs (All Services)	7.5%	6.1%
	Int'l RPMs ( " " )	9.3%	7.4%
<b>CAPACITY</b>	ASMs ad hoc by carrier, but to generally increase at a lower rate than RPMs. 1976-1977 and part of 1978's increase mostly due to seating changes and maximum utilization.		
<b>LOAD FACTOR</b>	Ad hoc by carrier; generally increasing between 3 and 4 percentage points.		

		<u>1975-1980</u>	<u>1980-1984</u>
		<u>Growth Rate Compounded "GRC"</u>	
Dom RPMs (All Services)		6.8%	6.0%
	Int'l RPMs ( " " )	6.6%	7.5%
System ASMs (All Services)		4.9%	5.5%
<b>LOAD FACTOR</b>	System (All Services) to increase from 53.9% in 1975 to 60.0% by 1984.		

		<u>1976-1984</u>
		<u>"GRC"</u>
<b>COST</b>	Labor (System) (Avg Compens/Empl)	7.7%
<b>INCREMENT</b>	Fuel ( " ) (¢ gal)	5.3%
<b>RATE</b>	Other ( " ) (Industrial Prices)	4.2%
<b>YIELDS</b>	Carriers' need to stay at least even with general inflationary trends, necessitates annual yield increases between 3-5% minimum.	

		<u>1976-1984</u>
		<u>"GRC"</u>
Labor (System) (Avg Compens/Empl)		7.8%
Fuel ( " ) (¢ gal)		5.5%
Other ( " ) (Industrial Prices)		4.5%
Yields - Dom (¢/RPM)		4.0%
" - Int'l ( " )		3.7%

**EQUIPMENT** Buys to concentrate on presently available aircraft through 1980. By 1981-1982 new technology aircraft parametered in are:  
 180 seat medium range type  
 200 seat long range type  
 to help with pressing need for fuel economies and to meet the environmental imperative of the late 1970's and early 1980's.

Having one of the most modern fleets in the industry, buys concentrate on 727-200s, DC-10s and 180 seat M/R type aircraft to allow for growth and maintenance of ASM range distribution. Carrier's environmental posture is excellent.

**MONEYABILITY** Cost of Capital - Ad hoc by carrier. Prime lending rate at 8-8.5% with carriers paying between ¼ and 1 percent above prime.  
Availability of Capital - very restricted until deregulation debate is settled. Funds to come from banks, manufacturers and through leasing. Loans from insurance companies restricted to a very few carriers, due to constrained cash generation and earnings outlook.

Ditto  
  
With no aircraft on order and consistently improving earnings, Continental will be more than able to finance all its needs. Carrier qualifies for loans under NYS insurance law from 1979 on. No flight equipment leases parametered in - but this option to finance also open to Continental. Rapidly improving moneyability ratios give clear picture of healthy posture of this carrier.

**CAB** Proposals under Aviation Act of 1975 not parametered into study. AERO ADVANCED will be re-done, when and if the various proposals have been enacted and a time frame is established.

Ditto

"EARNINGS"

In this year's annual report Chairman Six wrote, "If the cost of fuel can be stabilized, if wage and employee benefit costs currently being negotiated can be kept within patterns that Continental can live with, and if the Company receives long overdue and additional fare increases, it is possible for Continental to make a profit in 1976." With unit fuel and labor costs projected to rise only 9.7% and 10.3% respectively vs. 10.8% and 34.9% increases in 1975, and with the CAB granting fare increases totaling 7% in 1976, Continental should return to the black after only its second loss year in its history in 1975.

1976 revenues should be up about 12%. RPMs are up close to 11% for the first 9 months, but due to strikes against competitors, NAL and UAL, during last year's 4th quarter, CAL's traffic should actually decline during this year's final quarter. CAL's yields have been a little weaker than the industry's average because of the growing popularity of the carrier's economy class which is priced at 10% below coach. Cargo revenues will be up a strong 32% as the carrier continues to push this growing segment of its business.

On the expense side total operating expenses are projected to rise 11%. TOE were up 16% through the 6 months, but rose only 13% in the 2nd quarter after a startling 19% increase in the 1st quarter. These increases should moderate during the second half of the year as unit cost comparisons improve on a year over year basis. It should be noted that of our \$56 million projected increase in COE, \$45 million, or 80%, is accounted for by higher unit costs.

1977 results should be even better as Continental starts to reap the rewards of its major capital spending program. The carrier's modern fleet is one of the most fuel efficient in the industry. The new aircraft also permit CAL to have one of the best productivity records among the trunks. An additional benefit to CAL will be the tax benefits granted to the airlines in the new tax bill. Because CAL has unused investment tax credits, (\$59.6 million at 12/31/75), uses the flow-through method of accounting for ITCs, and should have healthy pre-tax income next year, the new law should allow CAL to report only a negligible tax rate. A further benefit to the carrier could come about if it is allowed to fly the Saipan-Tokyo route that the CAB recently awarded CAL. The Pacific has been a consistent money loser for the airline, 1975's \$120M profit is the only year it has made a profit, but the addition of Japan on the route could make this a highly profitable area.

The longer term outlook is one of the brightest among the trunk carriers. The carrier will be earning 5.5% of revenues and will be making more than 12% on its investment 5 of the 9 years under study. Over the past few years CAL's earnings have suffered as the carrier went through the expensive reequipment cycle. Now, with the fleet intact, and capital expenditures drastically reduced, CAL's earnings performance should outpace the industry's average over the foreseeable future.

P.S. Pilots strike threatened for Saturday 10/23 would, of course, drastically alter this schedule if it went on for any length of time.

EARNINGS

- calendar years -

	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
		Actual	P R O J E C T E D									
<b>Revenues</b>												
Passenger	\$Mil	455	507	569	634	702	778	858	943	1,035	1,135	7,161
Freight	"	38	50	58	66	74	82	92	101	111	122	756
<b>Total Revenues</b>	"	<b>531</b>	<b>595</b>	<b>665</b>	<b>740</b>	<b>825</b>	<b>910</b>	<b>1,010</b>	<b>1,110</b>	<b>1,220</b>	<b>1,340</b>	<b>8,415</b>
<b>Cash Oper Exp</b>												
Labor	"	190	214	239	268	301	334	370	418	462	515	3,121
Fuel	"	95	106	119	132	144	160	175	191	207	227	1,461
Other	"	163	184	203	223	244	270	293	318	348	383	2,466
<b>Total COE</b>	"	<b>448</b>	<b>504</b>	<b>561</b>	<b>623</b>	<b>689</b>	<b>764</b>	<b>838</b>	<b>927</b>	<b>1,017</b>	<b>1,125</b>	<b>7,048</b>
Depr/Amort	"	48	47	48	49	50	55	58	64	74	86	531
<b>Total Oper Exp</b>	"	<b>496</b>	<b>551</b>	<b>609</b>	<b>672</b>	<b>739</b>	<b>819</b>	<b>896</b>	<b>991</b>	<b>1,091</b>	<b>1,211</b>	<b>7,579</b>
<b>Oper Earnings</b>	"	<b>35</b>	<b>44</b>	<b>56</b>	<b>68</b>	<b>86</b>	<b>91</b>	<b>114</b>	<b>119</b>	<b>129</b>	<b>129</b>	<b>836</b>
Gross Interest	"	34	29	27	24	22	21	22	24	30	35	234
<b>Pre-Tax Earnings</b>	"	<b>1</b>	<b>15</b>	<b>29</b>	<b>44</b>	<b>64</b>	<b>70</b>	<b>92</b>	<b>95</b>	<b>99</b>	<b>94</b>	<b>602</b>
Inc. Tax	\$Mil	(7)	4	2	3	13	18	28	33	40	38	179
Eff. Rate	%	cr	27%	6%	6%	20%	25%	30%	35%	40%	40%	30%
<b>Net Earnings</b>												
Airline Operations	\$Mil	8	11	27	41	51	52	64	62	59	56	423
"Nettings"	"	(18)	1	3	4	(1)	3	6	8	11	4	39
<b>Reptd to Stockholders</b>	"	<b>(10)</b>	<b>12</b>	<b>30</b>	<b>45</b>	<b>50</b>	<b>55</b>	<b>70</b>	<b>70</b>	<b>70</b>	<b>60</b>	<b>462</b>
<b>RATIOS</b>												
<b>Traffic (All Services)</b>												
RPMS - DOM	Bil/%Chg	6.33 / 13	6.76 / 7	7.24 / 7	7.72 / 7	8.22 / 7	8.76 / 7	9.29 / 6	9.85 / 6	10.4 / 6	11.1 / 6	4.77 / 6.4GRC
RPMS - System	" / "	6.41 / 13	6.85 / 7	7.34 / 7	7.82 / 7	8.33 / 7	8.88 / 7	9.42 / 6	9.99 / 6	10.6 / 6	11.2 / 6	4.79 / 6.4GRC
ASMS - System	" / "	11.9 / 13	12.2 / 2	12.8 / 5	13.5 / 5	14.2 / 6	15.1 / 6	15.8 / 5	16.6 / 5	17.6 / 6	18.7 / 6	6.80 / 5.2GRC
Load Factor - System	%	53.9	56.4	57.5	58.0	58.5	59.0	59.5	60.0	60.0	60.0	6.1pts
Yield - Dom	¢RPM/%Chg	7.06 / 1	7.35 / 4	7.71 / 5	8.06 / 5	8.38 / 4	8.71 / 4	9.06 / 4	9.38 / 3	9.71 / 4	10.05 / 3	2.99 / 4.0GRC
Yield - System	" / "	7.11 / 1	7.40 / 4	7.76 / 5	8.10 / 5	8.43 / 4	8.76 / 4	9.11 / 4	9.44 / 4	9.77 / 4	10.11 / 3	3.00 / 4.0GRC
<b>COST INCREMENT (COE)</b>												
- Labor (Non-Add)	\$Mil/ %	18 / 11	19 / 10	20 / 9	22 / 9	22 / 8	22 / 7	24 / 7	27 / 7	30 / 7	34 / 7	220
- Fuel	" / "	25 / 35	10 / 10	9 / 8	7 / 6	6 / 5	6 / 4	7 / 4	8 / 4	8 / 4	9 / 4	70
- Other	" / "	3 / 2	16 / 9	10 / 5	8 / 4	10 / 4	10 / 4	10 / 4	11 / 3	12 / 4	13 / 3	100
- Total	" / "	46 / 14	45 / 10	39 / 8	37 / 7	38 / 6	38 / 5	41 / 5	46 / 5	50 / 5	56 / 5	390
<b>Weighted Index (1967=100)</b>	No / %Chg	<b>218 / 14</b>	<b>239 / 10</b>	<b>258 / 8</b>	<b>275 / 7</b>	<b>292 / 6</b>	<b>308 / 5</b>	<b>325 / 5</b>	<b>342 / 5</b>	<b>361 / 5</b>	<b>381 / 5</b>	<b>163 / 6.4GRC</b>

AERO AD: EARNINGS 1976-1984

C O N T I N E N T A L

C O M M E N T A R Y

"FLIGHT EQUIPMENT"

With the acquisition last year of 4 727-200s and 4 DC-10s and disposal of remaining 3 747s, Continental concluded its massive fleet revamping program. CAL has spent \$664 million on its current aircraft and it now possesses the youngest, and one of the most efficient fleets in the industry. By selling its 5 remaining 720Bs earlier this year, CAL's management simplified the carrier's fleet to only two types of aircraft, 727s and DC-10s. Continental is one of the industry leaders in the ever increasing move towards fleet standardization.

Except for 2 used 727-100s, which were bought this year to replace a stretched 727 which crashed last year, CAL does not need any additional capacity until 1979-1980. However, if CAL is awarded and able to fly some new routes (such as Saipan-Tokyo) the carrier may place an earlier order. Continental could also be interested in freighter aircraft as the carrier has experienced phenomenal growth in its cargo business over the last few years. Continental now carries cargo in the belly of its passenger planes, but based on our belief that the carrier will be increasing seating on all of its planes, CAL's management may decide to order a freighter.

In 1975 CAL flew its DC-10s with an average of only 209 seats which was by far and away the lowest seating configuration on a trijet. We have projected a gradual increase to 240 seats by 1979. CAL has already announced that it will convert its 6 DC-10s to nine-abreast seating serving the low-yield Hawaiian routes.

Our buys starting in 1979 are intended to maintain the carrier's ASM/range balance which is about 50% long range and 50% short-to-medium range. Our projected retirements of 727s include the older 200s which do not meet current environmental restrictions.

Our study projects that in 1984 Continental will be flying 2.7 billion ASMs with aircraft not meeting FAR Part 36 restrictions. To completely replace this capacity would cost CAL about \$270 million in 1984 dollars.

"FLIGHT EQUIPMENT"

FLIGHT EQUIPMENT - PURCHASE / RENOVALS / PAYMENTS / LEASES  
GROUND PROPERTY & EQUIPMENT (projected costs)

PURCHASES/LEASES (L)	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
	Actual	- P R O J E C T E D -										1984
Additions	No. A/C											
727-200/100		4	2*	-	-	3	3	-	-	-	-	8
DC-10		4	-	-	-	-	-	2	-	2	2	6
180 Seat M/R		-	-	-	-	-	-	-	5	5	3	13
<b>Total Additions</b>		<u>8</u>	<u>2</u>	<u>-</u>	<u>-</u>	<u>3</u>	<u>3</u>	<u>2</u>	<u>5</u>	<u>7</u>	<u>5</u>	<u>27</u>
<b>Total Cost A/C Type<sup>1/</sup></b>	\$ Mill											
727-200/100		30	5	-	-	34	36	-	-	-	-	75
DC-10		90	-	-	-	-	-	62	-	68	71	201
180 Seat M/R		-	-	-	-	-	-	-	139	139	88	366
<b>Total Cost Aircraft</b>		<u>120</u>	<u>5</u>	<u>-</u>	<u>-</u>	<u>34</u>	<u>36</u>	<u>62</u>	<u>139</u>	<u>207</u>	<u>159</u>	<u>642</u>
Removals	No A/C											
747		3	-	-	-	-	-	-	-	-	-	-
720B		-	5	-	-	-	-	-	-	-	-	5
727-200/100		1	-	-	-	-	-	-	5	5	5	15
<b>Total Removals</b>		<u>4</u>	<u>5</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>20</u>
<b>P A Y M E N T S <sup>4/</sup></b>												
Flight Eq Payments	\$ Mill											
Advance Deposits	"	7	-	-	11	33	37	47	44	45	40	257
Delivery	"	82	4	-	-	24	25	43	97	145	112	450
Spares, Modifs etc	"	7	6	5	9	3	8	10	9	10	8	68
<b>Total Flt Eq Payments</b>	"	<u>96</u>	<u>10</u>	<u>5</u>	<u>20</u>	<u>60</u>	<u>70</u>	<u>100</u>	<u>150</u>	<u>200</u>	<u>160</u>	<u>775</u>
Total Flt Eq Leases <sup>2/</sup>	"	-	-	-	-	-	-	-	-	-	-	-
<b>Total Flight Equipment</b>	"	<u>96</u>	<u>10</u>	<u>5</u>	<u>20</u>	<u>60</u>	<u>70</u>	<u>100</u>	<u>150</u>	<u>200</u>	<u>160</u>	<u>775</u>
GRD, PROP, & EQUIP <sup>3/</sup>	"	11	10	15	20	20	20	20	20	20	30	175

NOTES: (L-Leased, all others 70% purchased) M/R = Medium Range.  
<sup>1/</sup> Cost per Aircraft Type - number x cost per aircraft incl base price + CFE/MC/spares. SH&E derived.

<sup>2/</sup> Leases - None.

<sup>3/</sup> Grd. Prop & Equip. - Subject to management reprogramming.

<sup>4/</sup> Payments - (SH&E derived; reflect escalation)

Advance Deposits - pre-delivery @ 30% of unit price.

Delivery - balance remaining @ aircraft acceptance

Spares, Modifs, etc - @ 10% of aircraft cost (or derived)

\* Firm Order.

AERO AD: Flt. Eq/GPE 1976-1984

C O N T I N E N T A L

"CAPITAL NEEDS AND SOURCES"

Having completed its huge fleet revamping program last year, Continental is now in a position to reduce its heavy debt load as capital spending will be at minimum levels through 1978. As a matter of fact, our study forecasts that CAL will not match 1975's capital spending level for aircraft and GPE until 1981. In the 1976-1978 period we project CAL to repay \$143 million, or 33%, of its \$431 million in outstanding debt as of 12/31/75.

Over the entire study period CAL should have no trouble in financing its needs. The key is, of course, the carrier's superb cash generation which permits the carrier to supply over 70% of its capital needs from internal sources. New outside financing is projected at \$410 million which is nearly equivalent to the \$380 million in debt retirement. In other words 93% of CAL's borrowings will just be a refinancing of its expiring debt.

Starting next year we believe that Continental's Board will declare a cash dividend for the first time since it was suspended in mid-1970. (A 10% stock dividend was paid out in January 1975). The dividend level is projected at around 20% of earnings throughout the study period. CAL's cash flow could be further improved if the carrier's management decides to change its depreciation policy in regard to aircraft. For the 12 months ended 6/30/76, CAL charged \$800M less to depreciation expense than it would have if it had been using the CAB's depreciation guidelines.

Because it completed its fleet modernization program before most of the other carriers, CAL will be spending only \$950 million for flight equipment and GPE between 1976-1984. If these outlays are discounted back at a 5% rate, the resulting present value is \$724 million. Between 1967-1975 CAL spent \$945 million for these items, so while in actual dollars capital spending over the next 9 years will equal the previous 9 year's total, in real terms CAL's capital outlays will actually decline.

Recap: 1976-1984

Needs:           \$1.49 billion (52% flight equipment, 12% GPE, 26% debt retirement).  
Sources:         \$1.06 billion or 71% from operations (31% earnings, 36% depreciation/amortization).  
                  \$410 million or 28% new financing (\$410 million or 28% to be arranged).

CAPITAL NEEDS AND SOURCES (\$ MILL)  
- calendar years -

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984	
	ACTUAL				P R O J E C T E D							
<u>CAPITAL NEEDS</u>												
<u>Flight Equipment Payments</u>												
- Advance Deposits	7	-	-	11	33	37	47	44	45	40	257	
- Delivery	82	4	-	-	24	25	43	97	145	112	450	
- Spares, Modif. etc.	7	6	5	9	3	8	10	9	10	8	68	
Total Flt Equip Payments	96	10	5	20	60	70	100	150	200	160	775	
Add: Flt Equip Leases	-	-	-	-	-	-	-	-	-	-	-	
Total Flight Equipment	96	10	5	20	60	70	100	150	200	160	775	
<u>Ground Prop &amp; Eq/Other</u>												
Grd Prop & Equip	11	10	15	20	20	20	20	20	20	30	175	
Debt Retirement	18	37+10	43	53	52	55	36	37	21	15+20	380	
Dividends	-	-	6	6	8	10	14	14	19	15	90	
Other	4	3	1	1	-	5	-	(1)	-	-	10	
Total GPE & Other	33	60	65	80	80	90	70	70	60	80	655	
End Wkg Cap (3wks COE proj)	18	15	30	30	40	40	50	50	60	60	60	
<b>TOTAL CAPITAL NEEDS</b>	<b>147</b>	<b>85</b>	<b>100</b>	<b>130</b>	<b>180</b>	<b>200</b>	<b>220</b>	<b>270</b>	<b>320</b>	<b>300</b>	<b>1,490</b>	
<u>CAPITAL SOURCES</u>												
<u>Beginning Working Capital Operations</u>	9	18	15	30	30	40	40	50	50	60	20	
- Net Earnings (Rept'd)	(10)	12	30	45	50	55	70	70	70	60	460	
- Depreciation/Amort	48	47	48	49	50	55	58	64	74	86	530	
- Property Sale/Other	45	7	2	1	-	5	2	6	10	10	40	
- Other	(6)	1	5	5	-	5	-	-	6	4	30	
Total Operations	77	67	85	100	100	120	130	140	160	160	1,060	
<u>Financing Arrangements</u>												
- Senior Debt-Banks	55	-	-	-	50	40	50	20	40	-	200	
- " " -Insc/Others	2	-	-	-	-	-	-	60	40	50	150	
- Subord Debt	4	-	-	-	-	-	-	-	30	30	60	
- Leases (Cap @ AC Cost)	-	-	-	-	-	-	-	-	-	-	-	
- Deposits returnable	-	-	-	-	-	-	-	-	-	-	-	
- Stock Sales	-	-	-	-	-	-	-	-	-	-	-	
Tot Financing Arrangements	61	-	-	-	50	40	50	80	110	80	410	
<b>TOTAL CAPITAL SOURCES</b>	<b>147</b>	<b>85</b>	<b>100</b>	<b>130</b>	<b>180</b>	<b>200</b>	<b>220</b>	<b>270</b>	<b>320</b>	<b>300</b>	<b>1,490</b>	
<b>FINANCING TO BE ARRANGED</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>50</b>	<b>40</b>	<b>50</b>	<b>80</b>	<b>110</b>	<b>80</b>	<b>410</b>	

AERO AD: CAPITAL NEEDS & SOURCES 1976-1984

C O N T I N E N T A L

## C O M M E N T A R Y

### "MONEYABILITY"

With capital commitments at meager levels over the next few years, Continental will be able to greatly improve its balance sheet. At the end of 1975 only Eastern, Pan Am and TWA were more leveraged than CAL. However, a combination of large debt repayments together with vastly improving earnings will reduce the debt/stock equity ratio an incredible 163 percentage points by the end of 1978.

CAL's cash generation is so strong that the carrier only has to take on 9¢ of additional debt for every dollar of new equity. Outstanding bank debt actually declines in our forecast as starting in 1982 CAL utilizes other senior money and subordinated debt to finance its needs. CAL's management has continually expressed their distaste for the leasing of aircraft, but this financing option is certainly available to the carrier. By 1979, Continental will again qualify for insurance company money under N.Y. State Insurance Law.

The carrier's operating ratio is projected to drop down to 89% which means that Continental will be earning more than the CAB's 12% ROI standard. It should be noted, however, that back in 1966 CAL's operating ratio was 79%, and its return on investment topped 18%. Working capital was at only 1 week of cash operating expenses at 6/30/76, but it should reach 2 weeks by the end of this year, and after that there is no problem in keeping it at 3 weeks for the remainder of the study period.

Possessing the most modern fleet in the industry, Continental will not be faced with a massive financial headache if there is a tightening of environmental standards for aircraft.

CAL's bank agreement expires at the end of 1976. With no debt needed until 1979, there is no reason for Continental to enter into a new revolving credit agreement with the banks unless it can negotiate very favorable terms.

"MONEYABILITY"

MONEYABILITY - INVESTED CAPITAL  
(System - All Services)

	UNIT	1975 Actual	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976- 1984
		----- P R O J E C T E D -----										
<b>INVESTED CAPITAL</b>												
<b>Debt</b>												
Senior Debt - Banks	"	208	179	154	122	138	140	170	171	203	180	(28)
Senior Debt-Insco/Other	"	84	78	72	65	58	52	47	102	136	180	96
Senior Debt-Leases Cap'd	"	-	-	-	-	-	-	-	-	-	-	-
Senior Total - Reptd	"	292	257	226	187	196	192	217	273	339	360	68
Senior Total + Cap Lses	"	292	257	226	187	196	192	217	273	339	360	68
Subordinated	"	139	127	114	101	90	79	68	56	79	103	(36)
Total Debt - Reptd	"	431	384	340	288	286	271	285	329	418	463	32
Total Debt + Cap Lses	"	431	384	340	288	286	271	285	329	418	463	32
<b>Equity</b>												
Stock	"	147	159	183	222	264	309	365	421	472	517	370
Stock + Sub Debt	"	286	286	297	323	354	388	433	477	551	620	334
Tot Inv Capital-Reptd	"	578	543	523	510	550	580	650	750	890	980	402
Tot Inv Capital + Cap Lses	"	578	543	523	510	550	580	650	750	890	980	402
<b>FLIGHT EQUIPMENT</b>												
Depr Cost	"	498	468	438	408	414	406	421	504	647	730	232
Depr Cost + Mfr Deposit	"	499	468	438	419	448	466	509	595	720	795	296
Depr Cost + " + Cap Lses	"	499	468	438	419	448	466	509	595	720	795	296
<b>WORKING CAPITAL</b>												
Incl Cur Debt/Equiv Wks COE	\$Mill/Wks	18 /2	15 /2	30 /3	30 /3	40 /3	40 /3	50 /3	50 /3	60 /3	60 /3	42 /1
<b>RATIO ANALYSIS<sup>1/</sup> (G) UNIT/NORM</b>												
Sr Debt ÷ Equity (Stk + Sub)	%-150%	102	90	76	58	55	49	50	57	62	58	(44)pts.
Sr Debt ÷ Fi Eq (Net + Dep + Lse)	%- 80%	59	55	52	45	44	41	43	46	47	45	(14)pts.
Cap Lses Share Flt Eq	%- 33%	-	-	-	-	-	-	-	-	-	-	-
Total Debt ÷ Stock Equity	%-175%	293	242	186	130	108	88	78	78	89	90	(203)pts.
<b>N Y State Ins Law</b>												
Fix Chg Cov - 12 Mos	x-1.5	1.0	1.4	1.7	2.1	2.7	2.8	3.2	3.1	2.9	2.6	1.6x
Fix Chg Cov - 5 yr Avg	x-1.5	1.2	1.1	1.2	1.47	1.8	2.1	2.5	2.8	2.9	2.9	1.4x
Oper Ratio (Airline)	%	93	93	92	91	90	90	89	89	89	90	(3)pts.
Return On Inv (Corp)	%	4.3	7.6	10.9	13.5	13.1	13.1	14.2	12.5	11.2	9.7	5.4 pts.
Rev ÷ Tot Inv Cap	\$	0.92	1.10	1.27	1.45	1.50	1.57	1.55	1.47	1.37	1.37	0.45
Net Cap Comts <sup>2/</sup>	\$ Mil	30	60	120	170	210	290	390	410	380	400	-
Fin Argd / % Argd	"/%	67 /223	- /-	- /-	- /-	- /-	- /-	- /-	- /-	- /-	- /-	- /-
<b>Cash Generation</b>												
Flow per \$ Equity	¢/% Chg-30	20 /11	20 /-	25 /25	28 /12	29 /4	28 / (3)	28 /	26 / (7)	24 / (8)	23 / (4)	3 /15
Rev Less COE	Mills/% Chg-5.00	6.97 / (23)	7.46 /7	8.13 /9	8.67 /7	9.58 /10	9.67 /1	10.89 /13	11.02 /1	11.53 /5	11.50 /-	4.53 /65
per ASM												

Note: (G) See Glossary.

Moneyability -  
AERO AD: Inv. Capital 1976-1984

<sup>1/</sup> 12 months basis. % Changes are from end of prior year.  
<sup>2/</sup> Net Cap Comts = Next two years projected capital expenditures for flight equipment and GPE.

C O N T I N E N T A L

P A R A M E T E R S

----- U.S. TRUNKS & PAA -----

----- DELTA -----

**ECONOMY USA** Strong growth into 1977. Thereafter resumption of secular GNP real growth at 3-4% rate. Inflation rate to be about 5% per year in 1976 and 1977. Thereafter inflation to drop to 3½-4% per year. Unemployment rate to continue slow drop; consumer income and confidence to continue to advance.

DITTO

**World** Turnaround from recession levels slower than U.S. with inflation rates to continue above USA's.

DITTO

		<u>1975-1980</u>	<u>1980-1984</u>
		<u>Growth Rate Compounded "GRC"</u>	
<b>TRAFFIC</b>	Dom RPMs (All Services)	7.5%	6.1%
	Int'l RPMs ( " " )	9.3%	7.4%

		<u>1975-1980</u>	<u>1980-1984</u>
		<u>Growth Rate Compounded "GRC"</u>	
Dom RPMs (All Services)		7.0%	6.0%
	Int'l RPMs ( " " )	9.4	7.4

**CAPACITY** ASMs ad hoc by carrier, but to generally increase at a lower rate than RPMs. 1976-1977 and part of 1978's increase mostly due to seating changes and maximum utilization.

System ASMs (All Services) 5.6% 5.3%

**LOAD FACTOR** Ad hoc by carrier; generally increasing between 3 and 4 percentage points.

LOAD FACTOR System (All Services) to increase from 55.7% in 1975 to 61.0% by 1984.

		<u>1976-1984</u>
		<u>"GRC"</u>
<b>COST</b>	Labor (System) (Avg Compens/Empl)	7.7%
<b>INCREMENT</b>	Fuel ( " ) (¢ gal)	5.3%
	Other ( " ) (Industrial Prices)	4.2%

**YIELDS** Carriers' need to stay at least even with general inflationary trends, necessitates annual yield increases between 3-5% minimum.

		<u>1976-1984</u>
		<u>"GRC"</u>
Labor (System) (Avg Compens/Empl)		8.0%
Fuel ( " ) (¢ gal)		5.4%
Other ( " ) (Industrial Prices)		3.5%
Yields - Dom (¢/RPM)		4.0%
" - Int'l ( " )		3.9%

**EQUIPMENT** Buys to concentrate on presently available aircraft through 1980. By 1981-1982 new technology aircraft parametered in are:  
180 seat medium range type  
200 seat long range type  
to help with pressing need for fuel economies and to meet the environmental imperative of the late 1970's and early 1980's.

Buys concentrate on 727-200s, L-1011s and 180 seat medium range aircraft type to allow for growth, flight range ASM distribution needs, and gradual standardization of fleet. Phase-outs center mainly on environmentally unacceptable DC-8s and DC-9s.

**MONEYABILITY** Cost of Capital - Ad hoc by carrier. Prime lending rate at 8-8.5% with carriers paying between ¼ and 1 percent above prime.  
Availability of Capital - very restricted until deregulation debate is settled. Funds to come from banks, manufacturers and through leasing. Loans from insurance companies restricted to a very few carriers, due to constrained cash generation and earnings outlook.

DITTO

As the strongest cash generator in the industry, Delta will have no problem financing itself. In the last ten years and continuing throughout the study period, carrier never disqualified under NY State Insurance Law coverage test. Even if Delta is forced into quicker revamping of fleet due to environmental dictates, it should be able to manage nicely.

**CAB** Proposals under Aviation Act of 1975 not parametered into study. AERO ADVANCED will be re-done, when and if the various proposals have been enacted and a time frame is established.

DITTO

## C O M M E N T A R Y

### "EARNINGS"

Delta's earnings have bounced back strongly after a disappointing 1975. Net income should approach 1974's record earnings of \$87.3MM. Operating earnings were up 209% for the first six months, and should end the year about 63% above last year's level.

Delta's strong performance can be partly attributed to the long strike against its competitor, National. DAL has been able to keep some of its rival's passengers, and as a result, RPM growth far outpaced the industry's average during the first half of 1976. Second half increases will naturally be reduced as NAL was on strike during all of last year's fourth quarter. Nevertheless, DAL's RPMs should grow by around 8% this year. Yields should increase about 5% aided by the elimination of the "no-frills" fare which diluted yields last year. Delta's charter and freight divisions have been very strong this year and will help total revenues increase \$186 million over last year.

Expenses are projected to increase 10.4% this year with unit costs expected to rise 8.1% on a weighted basis. Of the \$126MM increase in COE, \$87 million, or 69%, is accounted for by higher prices. Employment is projected to rise less than 1%, fuel gallonage should increase between 3-4%, and ASMs will increase only about 6.7%. Depreciation will be up about 11% as the carrier continues to bring new aircraft into its fleet.

"Nettings" will be fairly substantial for DAL this year. Because the carrier borrowed pounds sterling to pay for the Rolls-Royce engines on the L-1011s, any drop in the value of the pound will be an unrealized gain for Delta under the new FASB accounting rules. Delta is also recording profits on all of the planes they sell thanks to their extremely conservative depreciation policy of writing off aircraft over only 10 years.

1977 looks like it will definitely be a record year for Delta. Pre-tax income is projected to be 31% higher than this year's, as the carrier continues to gain the advantages of its fleet modernization program. The new 727-200s and L-1011s are much more fuel efficient than the older DC-8's and DC-9's. Delta's productivity on an ASM basis should continue to improve with these new larger planes being added to the fleet. DAL's chances for productivity gains are further enhanced by the fact that DAL is the least unionized of all the trunk carriers. Because it amortizes investment tax credits, instead of "flowing them through", DAL's reported tax rate in 1977 will not be effected by the new tax law. However, on its own books DAL will record a lower tax rate.

The longer term outlook is one of the best in the industry. Earnings are projected at 6.9% of revenues. While this does not compare with the 11.8% profit margin in 1966, it is certainly sufficient to insure that DAL will be earning over 12% on its total capital and over 15% on its equity. The key to Delta's success will be, as with all other profitable carriers, a modern, efficient fleet and a management which can keep costs in check and productivity increasing.

"EARNINGS"

E A R N I N G S  
- calendar years -

	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
		Actual	P R O J E C T E D									1984
<b>Revenues</b>												
Passenger	\$Mil	1300	1474	1650	1838	2037	2256	2490	2733	3001	3279	20,758
Freight	"	69	87	98	111	123	136	150	165	180	200	1,250
<b>Total Revenues</b>	"	<u>1429</u>	<u>1615</u>	<u>1810</u>	<u>2020</u>	<u>2240</u>	<u>2480</u>	<u>2730</u>	<u>3000</u>	<u>3295</u>	<u>3600</u>	<u>22,790</u>
<b>Cash Oper Exp</b>												
Labor	"	576	638	714	791	876	961	1059	1174	1295	1423	6,931
Fuel	"	257	287	332	363	392	426	459	492	530	572	3,853
Other	"	386	420	462	504	548	603	660	720	785	857	5,559
<b>Total COE</b>	"	<u>1219</u>	<u>1345</u>	<u>1508</u>	<u>1658</u>	<u>1816</u>	<u>1990</u>	<u>2178</u>	<u>2386</u>	<u>2610</u>	<u>2852</u>	<u>18,343</u>
Depr/Amort	"	139	154	161	160	161	172	199	236	264	273	1,780
<b>Total Oper Exp</b>	"	<u>1358</u>	<u>1499</u>	<u>1669</u>	<u>1818</u>	<u>1977</u>	<u>2162</u>	<u>2377</u>	<u>2622</u>	<u>2874</u>	<u>3125</u>	<u>20,123</u>
<b>Oper Earnings</b>	"	71	116	141	202	263	318	353	378	421	475	2,667
Gross Interest	"	36	32	31	28	20	14	15	15	13	5	173
Pre-Tax Earnings	"	35	84	110	174	243	304	338	363	408	470	2,494
Inc. Tax	\$Mil	8	25	33	52	97	137	152	163	184	226	1,069
Eff. Rate	%	22%	30%	30%	30%	40%	45%	45%	45%	45%	48%	43%
<b>Net Earnings</b>												
Airline Operations	\$Mil	27	59	77	122	146	167	186	200	224	244	1,425
"Nettings"	"	10	21	33	8	14	13	14	10	16	16	145
Reptd to Stockholders	"	<u>37</u>	<u>80</u>	<u>110</u>	<u>130</u>	<u>160</u>	<u>180</u>	<u>200</u>	<u>210</u>	<u>240</u>	<u>260</u>	<u>1,570</u>
<b>RATIOS</b>												
<b>Traffic (All Services)</b>												
RPMS - DOM	Bil/%Chg	" / " 16.1/3	17.4/8	18.6/7	19.8/7	21.1/7	22.5/7	23.9/6	25.3/6	26.9/6	28.4/6	12.3/6.5GRC
RPMS - System	" / " 16.5/2	17.9/8	19.1/7	20.4/7	21.7/7	23.2/7	24.6/6	26.1/6	27.7/6	29.2/6		12.7/6.5GRC
ASMs - System	" / " 29.6/4	31.6/7	33.5/6	35.0/5	36.8/5	38.9/6	41.0/5	43.1/5	45.4/5	47.9/6		18.3/5.5GRC
Load Factor - System	%	55.7	56.6	57.0	58.2	59.0	59.5	60.0	60.5	61.0	61.0	5.3pts
Yield - Dom	¢RPM/%Chg	7.90/3	8.26/5	8.66/5	9.04/4	9.40/4	9.77/4	10.16/4	10.50/3	10.87/4	11.25/3	3.35/4.0GRC
Yield - System	" / " 7.89/3	8.24/5	8.64/5	9.02/4	9.37/4	9.74/4	10.13/4	10.48/3	10.85/4	11.22/3		3.33/4.0GRC
<b>COST INCREMENT (COE)</b>												
- Labor (Non-Add)	\$Mil/ %	43 /8	60 /10	66 /10	64 /9	66 /8	62 /7	70 /7	78 /7	85 /7	90 /7	641
- Fuel	" / " 58 /29	21 /8	30 /10	21 /6	18 /5	16 /4	17 /4	18 /4	21 /4	22 /4		184
- Other	" / " 11 /3	6 /2	16 /4	21 /4	18 /4	23 /4	24 /4	26 /3	27 /4	28 /3		189
- Total	" / " <u>112/14</u>	<u>87 /8</u>	<u>112/10</u>	<u>106/7</u>	<u>102/6</u>	<u>101/5</u>	<u>111/5</u>	<u>122/5</u>	<u>133/6</u>	<u>140/5</u>		<u>1014</u>
Weighted Index (1967=100)	No /%Chg	192/14	208/8	227/10	244/7	259/6	273/5	288/5	304/5	321/6	338/5	146/6.5GRC

AERO AD: EARNINGS 1976-1984

D E L T A

C O M M E N T A R Y

"FLIGHT EQUIPMENT"

Delta's fleet standardization program goes on. Having entered the year 1976 with a variety of seven different aircraft types, the carrier announced that an agreement has been reached with F.B. Ayer for the sale of all its DC-8-51s. Eight of these aircraft will be removed from the fleet this year and the remaining 13 early in 1977. The three 747s have been sold and will be returned to Boeing in the first half of 1977. Delta is also continuing strong sales efforts to dispose of its DC9-30 aircraft. In addition, our study projects sale of the five 727-100s in 1978 and disposition of the 13 DC-8-61s between 1981 and 1983.

Delta currently has 27 727-200s on order for delivery between 1976 and 1978, and 12 L-1011s for 1976-1980 deliveries. Our study projects an additional order for four 727-200s in 1979 and after that a switch-over to the advanced technology type aircraft with 180 seats. We also believe that Delta will become a buyer of the L-1011-500 with its long-range capability, especially if the long-delayed Trans Atlantic route case will finally get Presidential approval. This aircraft will be ideally suited for the Atlanta-London route, and as a replacement for the DC8-61s. In addition to the announced orders, our buys concentrate mainly in the medium-to-short range where Delta flies about 90% of its ASMs. During the study period, we are projecting the purchase of a total of 99 aircraft at a cost of about \$2.3 billion and the removal of 92 aircraft. So, by 1984, Delta will have standardized its fleet on the 727-200s, L-1011s, and the 180 seat medium range type.

At the end of 1984, Delta will still have 12 DC9-30s remaining in its fleet, and to replace the ASMs generated by this aircraft, will cost an additional \$130 million in 1984 dollars. If the carrier should accelerate the phase-out of the DC9-30s, Delta would be the proud owner of an entire aircraft fleet meeting requirements under FAR Part 36.

"FLIGHT EQUIPMENT"

FLIGHT EQUIPMENT - PURCHASE / REMOVALS / PAYMENTS / LEASES  
GROUND PROPERTY & EQUIPMENT (projected costs)

PURCHASES/LEASES (L)	Unit	1975 Actual	- - - P R O J E C T E D - - -										1976-
			1976	1977	1978	1979	1980	1981	1982	1983	1984	1984	
727-200	No. A/C	20	14*	9*	4*	4	-	-	-	-	-	-	31
L-1011		-	3*	1*	3*	3*	2*	-	-	-	-	2	14
L-1011-500		-	-	-	-	-	3	3	-	-	-	-	6
180 Seat M/R		-	-	-	-	-	-	10	15	15	15	8	48
<b>Total Additions</b>		<u>20</u>	<u>17</u>	<u>10</u>	<u>7</u>	<u>7</u>	<u>5</u>	<u>13</u>	<u>15</u>	<u>15</u>	<u>10</u>		<u>99</u>
<u>Total Cost A/C Type<sup>1/</sup></u>	\$ Mill												
727-200		169	139	94	44	46	-	-	-	-	-	-	323
L-1011		-	72	25	80	84	59	-	-	-	-	72	392
L-1011-500		-	-	-	-	-	128	135	-	-	-	-	263
180 Seat M/R		-	-	-	-	-	-	253	398	418	234	-	1303
<b>Total Cost Aircraft</b>		<u>169</u>	<u>211</u>	<u>119</u>	<u>124</u>	<u>130</u>	<u>187</u>	<u>388</u>	<u>398</u>	<u>418</u>	<u>306</u>		<u>2281</u>
<b>Removals</b>	No A/C												
FH 227/DC-10		6	-	-	-	-	-	-	-	-	-	-	-
747/727-100		1	-	3	5	-	-	-	-	-	-	-	8
DC9-30		4	3	4	5	8	8	4	6	6	6	6	50
DC8-50/DC8-61		-	8	13	-	-	-	5	4	4	-	-	34
<b>Total Removals</b>		<u>11</u>	<u>11</u>	<u>20</u>	<u>10</u>	<u>8</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>10</u>	<u>6</u>		<u>92</u>
<b>P A Y M E N T S 4/</b>													
<u>Flight Eq Payments</u>	\$ Mill												
Advance Deposits	"	43	48	58	63	110	127	105	76	50	50	50	687
Delivery	"	118	148	84	87	91	131	271	278	292	214	214	1596
Spares, Modifs etc	"	5	4	8	10	9	12	14	16	8	6	6	87
<b>Total Flt Eq Payments</b>	"	<u>166</u>	<u>200</u>	<u>150</u>	<u>160</u>	<u>210</u>	<u>270</u>	<u>390</u>	<u>370</u>	<u>350</u>	<u>270</u>	<u>270</u>	<u>2370</u>
Total Flt Eq Leases 2/	"	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Flight Equipment</b>	"	<u>166</u>	<u>200</u>	<u>150</u>	<u>160</u>	<u>210</u>	<u>270</u>	<u>390</u>	<u>370</u>	<u>350</u>	<u>270</u>	<u>270</u>	<u>2370</u>
GRD, PROP, & EQUIP 3/	"	25	20	20	30	30	30	30	40	40	40	40	280

NOTES: (L-Leased, all others 70% purchased) M/R = Medium Range.

1/ Cost per Aircraft Type - number x cost per aircraft incl base price + CFE/MC/spares. SH&E derived.

2/ Leases - None.

3/ Grd. Prop & Equip. - Subject to management reprogramming.

4/ Payments - (SH&E derived; reflect escalation)

Advance Deposits - pre-delivery @ 30% of unit price.

Delivery - balance remaining @ aircraft acceptance

Spares, Modifs, etc - @ 10% of aircraft cost (or derived)

\* Firm order.

AERO AD: FLT. EQ/GPE 1976-1984

DELTA

"CAPITAL NEEDS AND SOURCES"

Based on our earnings and flight equipment forecast, Delta will only have to borrow about \$210 million during the study period which it also will be able to pay back in that time span. As the study shows, the carrier will have excess working capital during most of the years, as cash generated internally is more than plentiful.

Delta prepaid in early 1976 \$25 million in bank debt which was not due until 1977. However, we forecast that the carrier will have to borrow about \$55 million in the fourth quarter of 1976 to help pay for delivery of 8 727-200s. We have kept working capital in 1976 at the one week level, a policy which Delta has been following for a number of years. However, at the end of 1977 and 1978, working capital will be at a level of over 4 weeks of cash operating expenses, as the carrier is generating more capital than it needs. Dividend payments are increased to a payout rate of 25% of net earnings, a change the carrier can well afford.

Delta's fantastic cash flow (its cash generation ratio reaches 15.6 mills per ASM, the highest in the industry) is a result of excellent earnings and a very conservative depreciation policy. All aircraft are depreciated over 10 years to 10% residual. If in 1975, Delta had followed the depreciation guidelines of the CAB, it would have reduced its depreciation charge by almost \$26 million. The second largest generator of cash flow, net earnings, contributes more than 40% to internal sources. Delta is just starting to sell older aircraft, and this will become a steady source of additional funds over the next nine years.

The bank borrowings shown in 1980 and 1981 are strictly for large advance deposits and delivery payments forecasted by us. These borrowings can easily be repaid by the carrier starting in 1983.

In general, Delta's financial officer will have one of the easiest jobs in the airline industry. Even if environmental pressures should increase and Delta be forced to accelerate its flight equipment revamping, it will be able to do so without any financial strain.

We are showing capital expenditures for flight equipment and ground property of \$2.65 billion between 1976 and 1984. If these expenditures are discounted at a 5% rate, the resulting present value is \$2.13 billion, still 18% more than the carrier spent between 1967 and 1975.

Recap: 1976-1984

**Needs:** \$3.89 billion (61% flight equipment, 7% GPE, 17% debt retirement, 8% dividend, and excess working capital 2%).

**Sources:** \$3.64 billion or 94% from operations (40% earnings, 46% depreciation, and 8% property sale/other).  
\$210 million or 5% new financing (\$200 million to be arranged).

CAPITAL NEEDS AND SOURCES (\$ MILL)  
- calendar years -

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976- 1984	
	ACTUAL				P R O J E C T E D							
<u>CAPITAL NEEDS</u>												
<u>Flight Equipment Payments</u>												
- Advance Deposits	43	48	58	63	110	127	105	76	50	50	687	
- Delivery	118	148	84	87	91	131	271	278	292	214	1596	
- Spares, Modif. etc.	5	4	8	10	9	12	14	16	8	6	87	
Total Flt Equip Payments	166	200	150	160	210	270	390	370	350	270	2370	
Add: Flt Equip Leases	-	-	-	-	-	-	-	-	-	-	-	
Total Flight Equipment	166	200	150	160	210	270	390	370	350	270	2370	
<u>Ground Prop &amp; Eq/Other</u>												
Grd Prop & Equip	25	20	20	30	30	30	30	40	40	40	280	
Debt Retirement	21	84	51	78	60+50	142	20	9	8+60	8+80	650	
Dividends	12	13	14	20	20	28	40	50	50	70	310	
Other	-	33	5	2	-	-	-	1	2	2	40	
Total GPE & Other	58	150	90	130	160	200	90	100	160	200	1280	
End Wkg Cap (3wks COE proj)	38	20	120	140	120	120	130	140	160	170+70	240	
TOTAL CAPITAL NEEDS	262	370	360	430	490	590	610	610	670	710	3890	
<u>CAPITAL SOURCES</u>												
Beginning Working Capital	(21)	38	20	120	140	120	120	130	140	160	40	
<u>Operations</u>												
- Net Earnings (Rept'd)	37	80	110	130	160	180	200	210	240	260	1570	
- Depreciation/Amort	139	154	161	160	161	172	199	236	264	273	1780	
- Property Sale/Other	5	30	70	20	30	30	40	30	30	20	290	
- Other	20	2	(1)	-	(1)	(2)	1	4	(4)	(3)	-	
Total Operations	201	266	340	310	350	380	440	480	530	550	3640	
<u>Financing Arrangements</u>												
- Senior Debt-Banks	40	55	-	-	-	90	50	-	-	-	195	
- " " -Insko/Others	42	11	-	-	-	-	-	-	-	-	11	
- Subord Debt	-	-	-	-	-	-	-	-	-	-	-	
- Leases (Cap @ AC Cost)	-	-	-	-	-	-	-	-	-	-	-	
- Deposits returnable	-	-	-	-	-	-	-	-	-	-	-	
- Stock Sales	-	-	-	-	-	-	-	-	-	-	-	
Tot Financing Arrangements	82	66	-	-	-	90	50	-	-	-	210	
TOTAL CAPITAL SOURCES	262	370	360	430	490	590	610	610	670	710	3890	
FINANCING TO BE ARRANGED	-	55	-	-	-	90	50	-	-	-	200	

AERO AD: Capital Needs and Sources 1976-1984

DELTA

## C O M M E N T A R Y

### "MONEYABILITY"

Delta's Moneyability posture is among the top three in the industry, and will continue to get even better during the study period. Even our forecasted heavy capital spending program can be financed entirely from internal sources (see Capital Needs and Sources schedule).

Bank debt will be totally paid off by 1984, and all other debt could be eliminated from the balance sheet, if the carrier so desires, since we have forecasted working capital at a much higher level than the carrier historically has maintained. Leases decline sharply in 1976 as Delta purchased the assets of Storer Leasing, and are eventually completely eliminated with the expiration of the 727-200 leases.

Stock equity more than triples over the study period, reflecting the better than average earnings of this carrier.

All Moneyability ratios have been consistently better than our norms, and will continue to improve over the study period. Delta will be in the enviable position of being virtually debt free by 1984. While fixed charge coverage under the N.Y. State Insurance Law has never been violated, this ratio increases dramatically. With the operating ratio dropping down to 87%, Delta achieves the highest return on investment of the industry, over 16%. However, back in 1966, the carrier reached an ROI of over 20% and an operating ratio of 76%. The revenue generated on the invested capital base has always been the highest among the trunk carriers, and this improves to over \$2.00 for every dollar invested.

Cash flow per equity improves dramatically in the next three years, but then starts a steady decline, as the equity base increases so substantially. Cash generation per ASM, never below our crucial 5.00 mills norm, more than doubles during the study period and is a clear indicator that Delta will have no problems financing itself. This is an enviable position for any management to find itself in.

"MONEYABILITY"

MONEYABILITY - INVESTED CAPITAL  
(System - All Services)

		1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
	UNIT	Actual	P R O J E C T E D									
<b>INVESTED CAPITAL</b>												
<b>Debt</b>												
	\$ Mil											
Senior Debt - Banks	"	327	308	283	232	133	90	140	140	80	-0-	(327)
Senior Debt-Insco/Other	"	118	119	93	67	58	51	33	26	18	11	(107)
Senior Debt-Leases Cap'd	"	42	20	17	14	11	7	4	-	-	-	(42)
Senior Total - Reptd	"	444	427	376	299	191	141	173	166	98	11	(433)
Senior Total + Cap Lses	"	486	447	393	313	202	148	177	166	98	11	(475)
Subordinated	"	25	24	23	22	20	19	17	15	14	13	(12)
Total Debt - Reptd	"	469	451	399	321	211	160	190	181	112	24	(445)
Total Debt + Cap Lses	"	511	471	416	335	222	167	194	181	112	24	(487)
<b>Equity</b>												
Stock	"	500	557	653	763	903	1055	1215	1375	1565	1755	1255
Stock + Sub Debt	"	525	577	676	785	923	1074	1232	1390	1579	1768	1243
Tot Inv Capital-Reptd	"	969	1008	1052	1084	1114	1215	1405	1556	1677	1799	810
Tot Inv Capital + Cap Lses	"	1011	1028	1069	1098	1125	1222	1409	1556	1677	1779	768
<b>FLIGHT EQUIPMENT</b>												
Depr Cost	"	997	1102	1035	1012	1001	1038	1248	1433	1612	1677	680
Depr Cost + Mfr Deposit	"	1040	1129	1084	1087	1148	1255	1454	1596	1700	1723	683
Depr Cost + " + Cap Lses	"	1082	1149	1101	1101	1159	1262	1458	1596	1700	1723	641
<b>WORKING CAPITAL</b>												
Incl Cur Debt/Equip Wks COE	\$Mill/Wks	38/2	20/1	120/4	140/4	120/3	120 /3	130/3	140/3	160/3	240 /4	202 /2
<b>RATIO ANALYSIS<sup>1/</sup> (G) UNIT/NORM</b>												
Sr Debt ÷ Equity (Stk + Sub)	%-150%	93	77	58	40	22	14	14	12	6	1	(92)pts
Sr Debt ÷ Fl Eq (Net + Dep + Lse)	%- 80%	45	39	36	28	17	12	12	10	6	1	(44)pts
Cap Lses Share Flt Eq	%- 33%	4	2	2	1	1	1	-	-	-	-	(4)pts
Total Debt ÷ Stock Equity	%-175%	102	85	64	44	25	16	16	13	7	1	(101)pts
<b>N Y State Ins Law</b>												
Fix Chg Cov - 12 Mos	x-1.5	1.4	2.2	2.7	3.7	5.2	6.7	6.9	7.1	8.3	10.2	8.8x
Fix Chg Cov - 5 yr Avg	x-1.5	2.2	2.3	2.3	2.5	3.0	4.1	5.0	5.9	6.8	7.8	5.6x
Oper Ratio (Airline)	%	95	93	92	90	88	87	87	87	87	87	(8)pts
Return On Inv (Corp)	%	7.7	10.1	13.3	14.5	16.1	16.0	15.3	14.5	15.1	14.9	7.2pts
Rev ÷ Tot Inv Cap	\$	1.41	1.57	1.69	1.84	1.99	2.03	1.94	1.93	1.96	2.02	0.61¢
Net Cap Comts <sup>2/</sup>	\$ Mil	385	360	430	540	720	830	800	700	700	600	-
Fin Argd / % Argd	"/%	14/4	7/2	-/-	-/-	- /-	- /-	- /-	- /-	- /-	- /-	- /-
<b>Cash Generation</b>												
Flow per \$ Equity	¢/% Chg-30	32/(14)	37/16	38/3	36/(5)	33/(8)	32 / (3)	31/(3)	31/-	31/-	29 / (6)	(3)/(9)
Rev Less COE	Mills/% Chg-5.00											
per ASM		7.12/(27)	8.54/20	9.01/6	10.34/15	11.52/11	12.60/9	13.46/7	14.25/6	15.09/6	15.62/4	8.50/119

Moneyability -  
AERO: Inv. Capital 1976-1984

D E L T A

Note: (G) See Glossary.

<sup>1/</sup> 12 months basis. % Changes are from end of prior year.

<sup>2/</sup> Net Cap Comts = Next two years projected capital expenditures for flight equipment and GPE.

P A R A M E T E R S

----- U.S. TRUNKS & PAA -----

**ECONOMY USA** Strong growth into 1977. Thereafter resumption of secular GNP real growth at 3-4% rate. Inflation rate to be about 5% per year in 1976 and 1977. Thereafter inflation to drop to 3½-4% per year. Unemployment rate to continue slow drop; consumer income and confidence to continue to advance.

**World** Turnaround from recession levels slower than U.S. with inflation rates to continue above USA's.

----- EASTERN -----

Ditto

Ditto

		<u>1975-1980</u>	<u>1980-1984</u>
		<u>Growth Rate Compounded "GRC"</u>	
<b>TRAFFIC</b>	Dom RPMs (All Services)	7.5%	6.1%
	Int'l RPMs ( " " )	9.3%	7.4%
<b>CAPACITY</b>	ASMs ad hoc by carrier, but to generally increase at a lower rate than RPMs. 1976-1977 and part of 1978's increase mostly due to seating changes and maximum utilization.		
<b>LOAD FACTOR</b>	Ad hoc by carrier; generally increasing between 3 and 4 percentage points.		

		<u>1975-1980</u>	<u>1980-1984</u>
		<u>Growth Rate Compounded "GRC"</u>	
	Dom RPMs (All Services)	6.8%	5.8%
	Int'l RPMs ( " " )	7.2%	7.2%
	System ASMs (All Services)	5.9%	5.6%
<b>LOAD FACTOR</b>	System (All Services) to increase from 56.3% in 1975 to 60.0% by 1984.		

		<u>1976-1984</u>
		<u>"GRC"</u>
<b>COST</b>	Labor (System) (Avg Compens/Empl)	7.7%
<b>INCREMENT</b>	Fuel ( " ) (¢ gal)	5.3%
<b>RATE</b>	Other ( " ) (Industrial Prices)	4.2%
<b>YIELDS</b>	Carriers' need to stay at least even with general inflationary trends, necessitates annual yield increases between 3-5% minimum.	

		<u>1976-1984</u>
		<u>"GRC"</u>
	Labor (System) (Avg Compens/Empl)	8.0%
	Fuel ( " ) (¢ gal)	5.7%
	Other ( " ) (Industrial Prices)	3.6%
	Yields - Dom (¢/RPM)	4.1%
	" - Int'l ( " )	3.9%

**EQUIPMENT** Buys to concentrate on presently available aircraft through 1980. By 1981-1982 new technology aircraft parametered in are:  
 180 seat medium range type  
 200 seat long range type  
 to help with pressing need for fuel economies and to meet the environmental imperative of the late 1970's and early 1980's.

Buy concentrate on L-1011 for long-range, and 727-200, DC9-50 and 180 seat medium range type to meet ASM requirements in short and medium range markets. No additional L-1011 sales beyond the ones announced parametered in. By 1984, 143 aircraft still in fleet not meeting requirements under FAR Part 36.

**MONEYABILITY** Cost of Capital - Ad hoc by carrier. Prime lending rate at 8-8.5% with carriers paying between ¼ and 1 percent above prime.  
Availability of Capital - very restricted until deregulation debate is settled. Funds to come from banks, manufacturers and through leasing. Loans from insurance companies restricted to a very few carriers, due to constrained cash generation and earnings outlook.

Ditto

Even with strong earnings improvement, carriers' heavy debt repayment schedule plus capital outlays for flight equipment force it to seek financing from all outside sources. Improving ratios over study period should allow this. No borrowings from insurance companies possible, since EAL does not meet the fixed charge coverage test throughout study period.

**CAB** Proposals under Aviation Act of 1975 not parametered into study. AERO ADVANCED will be re-done, when and if the various proposals have been enacted and a time frame is established.

Ditto

## C O M M E N T A R Y

### "EARNINGS"

Eastern is heading for a record year in 1976. The \$37.6 MM earned in the first half of the year is more than the carrier ever earned in any full year; and with traffic continuing to be strong and costs under control, Eastern should make some money during the last six months of 1976. While the \$45 MM in projected profits far exceeds the \$29.8 MM earned in 1965, it should be noted that this year's profit margin of 2.5% is considerably below 1965's 5.8% and EAL's 1976 ROI of 8.1% is again way below the comparable 1965 figure.

Eastern's stunning turn-around after last year's disastrous \$49.7 MM loss can be accounted for by the following three factors:

- 1) National's long strike last fall;
- 2) The wage freeze introduced for this year; and,
- 3) Management's tight control of costs other than fuel and labor.

Eastern, along with Delta, picked up most of National's passengers when last September NAL suffered its second major strike in the past two years. National's rather timid post-strike marketing strategy has permitted Eastern and Delta to have a real windfall during the first six months of this year as mutual aid payments stopped when National's strike was settled in the first week of January. As of this date, National has not yet regained its 1975 market share.

In order to get lender approval for a \$75 million debt deferral (see Capital Needs and Sources schedule) EAL was forced to institute a wage freeze program for 1976. The program has produced (after accruals) almost 20% of \$37.6 MM earned in the first half of 1976. It is estimated that the net effect of the freeze will increase income by around \$15-\$17 MM for the full year.

Under Colonel Borman's guidance Eastern is apparently becoming a better managed airline. Employee productivity is rising and "other" costs (all cash operating expenses excluding fuel and labor) are actually declining on an ASM basis. Eastern's "other" cost per ASM was down 2% last year and was reduced another 3% in the first quarter of 1976, while the industry was up 7% last year and is up 5% so far this year. Borman likes to point out that EAL's management staff has been slashed so that now the carrier's group of 45 officers is one of the smallest in the industry. Eastern has recently completed a study of their entire route structure and has decided to cut service in the money-losing Caribbean and to concentrate

"EARNINGS"

C O M M E N T A R Y

"EARNINGS" (Continued)

their resources more heavily on the business market and less on the seasonal pleasure market.

EAL's "Nettings" figure is considerably higher this year as a result of the airline's giving up its Puerto Rican hotels. The Dorado subsidiary had lost \$17 million pre-tax between 1972-1975 before EAL decided to take a \$16.8 million write-off last year. Under the new FASB accounting rules the drop in the pound sterling this year (EAL borrowed pounds to finance the L-1011s engines) added \$3.9 MM to EAL's first half profit.

Colonel Borman recently said that Eastern must earn 2-3¢ on every sales dollar to remain a viable carrier. Over the study period we see Eastern's profit margin at 2.64% with a peak of 3.27% in 1982. Even with these much improved earnings, Eastern is never able to earn more than a 10.3% ROI.

N.B. The "+" numbers after the 1977-1981 labor figures are the amounts of profit sharing the employees will be entitled to because of this year's wage freeze program. 1977 earnings will probably decline as National should become more aggressive and take back some of its lost traffic. Also unit costs continue to rise at a 9% rate for Eastern, mainly because of operation catch-up to average industry wage rates.

Recent proposals by Col. Borman to tie salaries to profit or losses in future years, employee contributions to a flight re-equipment fund etc. are not parametered into this study.

EARNINGS

- calendar years -

	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
		Actual					P R O J E C T E D					
<u>Revenues</u>												
Passenger	\$Mil	1453	1650	1826	2037	2255	2514	2778	3049	3357	3676	23,142
Freight		61	61	69	77	85	94	104	114	125	137	866
Total Revenues	"	1624	1830	2026	2260	2503	2790	3065	3365	3705	4055	25,599
<u>Cash Oper Exp</u>												
Labor	"	670	740	829+10	940+5	1031+7	1148+14	1275+18	1402	1552	1726	10,643+54
Fuel	"	272	306	356	397	436	479	521	565	613	662	4,335
Other	"	578	609	679	760	830	917	1003	1099	1209	1320	8,426
Total COE	"	1520	1655	1864	2097	2297	2544	2799	3066	3374	3708	23,404+54
Depr/Amort	"	98	102	103	105	108	112	119	129	142	161	1,081
Total Oper Exp	"	1618	1757	1967	2202	2405	2656	2918	3195	3516	3869	24,485+54
Oper. Earnings	"	6	73	49	53	91	120	129	170	189	186	1,060
Gross Interest	"	54	48	43	41	42	46	50	53	58	63	444
Pre-Tax Earnings	"	(48)	25	6	12	49	74	79	117	131	123	616
Inc. Tax	\$Mil	-0-	-0-	-0-	-0-	5	15	16	23	26	25	110
Eff. Rate	%	-	-	-	-	10%	20%	20%	20%	20%	20%	18%
<u>Net Earnings</u>												
Airline Operations	\$Mil	(48)	25	6	12	44	59	63	94	105	98	506
"Nettings"	"	(2)	20	14	18	16	21	27	16	15	22	169
Reptd to Stockholders	"	(50)	45	20	30	60	80	90	110	120	120	675
<u>RATIOS</u>												
<u>Traffic (All Services)</u>												
RPMs - DOM	Bil/%Chg	" / " 14.6/ 3	15.9/ 9	16.8/ 6	17.9/ 6	19.0/ 6	20.3/ 7	21.5/ 6	22.7/ 6	24.1/ 6	25.4/ 5	10.8/6.3 GRC
RPMs - System	" / " 18.3/ 2	19.9/ 8	21.0/ 6	22.4/ 7	23.8/ 6	25.5/ 7	27.1/ 6	28.8/ 6	30.6/ 6	32.3/ 6	34.0/ 6	14.0/6.5 GRC
ASMs - System	" / " 32.5/ 9	33.9/ 4	36.3/ 7	38.7/ 7	40.7/ 5	43.2/ 6	45.5/ 5	48.0/ 6	51.0/ 6	53.8/ 6	56.6/ 6	21.3/5.8 GRC
Load Factor - System	%	56.3	58.6	57.7	57.9	58.5	59.0	59.5	60.0	60.0	60.0	3.7 pts.
Yield - Dom	¢RPM/%Chg	8.18/ 3	8.59/ 5	9.02/ 5	9.43/ 5	9.80/ 4	10.2/ 4	10.6/ 4	11.0/ 4	11.4/ 3	11.8/ 4	3.58/4.1 GRC
Yield - System	" / " 7.94/ 5	8.31/ 5	8.72/ 5	9.11/ 5	9.47/ 4	9.85/ 4	10.2/ 4	10.6/ 4	11.0/ 3	11.4/ 4	11.8/ 4	3.43/4.1 GRC
<u>COST INCREMENT (COE)</u>												
- Labor (Non-Add)	\$Mil/ %	56/ 9	71/11	68/ 9	85/10	69/ 7	75/ 7	82/ 7	93/ 7	99/ 7	115/ 7	757
- Fuel	" / " 56/26	29/10	32/10	22/ 6	21/ 5	18/ 4	20/ 4	22/ 4	23/ 4	26/ 4	26/ 4	213
- Other	" / " (10)/(2)	6/ 1	26/ 4	36/ 5	32/ 4	36/ 4	38/ 4	43/ 4	41/ 3	45/ 4	45/ 4	303
- Total	" / " 102/11	106/ 9	126/ 9	143/ 8	122/ 6	129/ 5	140/ 6	158/ 5	163/ 5	186/ 6	186/ 6	1273
Weighted Index (1967=100)	No / %Chg	201/11	220/ 9	238/ 9	256/ 8	272/ 6	287/ 5	303/ 6	319/ 5	337/ 5	356/ 6	155/6.6 GRC

AERO AD: EARNINGS 1976-1984

EASTERN

## C O M M E N T A R Y

### "FLIGHT EQUIPMENT"

CEO Borman recently stated that Eastern needs more stretched jets (727-200s and DC9-50s) if the carrier is to be able to successfully compete with its arch-rival Delta. Eastern's management is now trying to rectify the mistake made in the late 1960's when the carrier over ordered the L-1011s. However, "Operation Catch Up" is a very expensive game in the airline business. Eastern has been caught in a vicious cycle where it needs more efficient aircraft but it cannot afford to buy them because of its poor earnings and capital structure. Of course, one of the major reasons for the dismal income statements has been the use of older, less-efficient aircraft.

Earlier this year EAL was able to arrange the lease financing for six 727-200s to be delivered this fall and for nine DC9-50s which are to be delivered during the second half of 1977. These 15 new medium-range jets, together with the seven L-1011s already on order, will meet the carrier's needs through 1978. After that, buys will concentrate on short-to-medium range aircraft to maintain the airline's historical ASM/range balance of  $\frac{1}{4}$  long and  $\frac{3}{4}$  short-medium. We have projected additional orders of 22 DC9-50s and only four 727-200s. This ratio could easily be reversed in Boeing's favor which would mean a slight reduction in the number of aircraft ordered as the 727 has 137 seats while the DC9 has only 115. The new 180 seat aircraft, arriving in the early 1980's, will permit EAL to down range some of its older 727-200s to replace the standard 727s which are being sold.

Eastern has managed to reduce its L-1011 fleet by selling two, by leasing one out, and by discontinuing its seasonal lease agreement with TWA. In 1977 it will be selling its 14 remaining Electras (the Shuttle will become an all jet operation) and trading in nine DC9-10s in exchange for the new DC9-50s. Eastern cannot yet afford a massive fleet revamping, so there are no more removals from the fleet (except for two DC9-30s going off lease in 1978) until 1981.

Even with the \$2.2 billion spent between 1976 and 1984 for the 102 aircraft, Eastern will still be flying 143 aircraft in 1984 that do not meet the environmental restrictions of FAR Part 36. To replace these planes, or 18.96 billion ASMs, would require an additional outlay of \$1.97 billion in 1984 dollars.

FLIGHT EQUIPMENT - PURCHASE / REMOVALS / PAYMENTS / LEASES  
GROUND PROPERTY & EQUIPMENT (projected costs)

	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
		Actual	- P R O J E C T E D -									
<b>PURCHASES/LEASES (L)</b>												
<b>Additions</b>	No. A/C											
L-1011		2+1L	1**+1L*	2L*	3	-	4	-	-	5	4	20
727-200		-	6L*	-	-	4	-	-	-	-	-	10
DC9-50		-	-	9L*	-	4	12	6	-	-	-	31
180 Seat M/R		-	-	-	-	-	-	8	12	12	9	41
<b>Total Additions</b>		<u>3</u>	<u>8</u>	<u>11</u>	<u>3</u>	<u>8</u>	<u>16</u>	<u>14</u>	<u>12</u>	<u>17</u>	<u>13</u>	<u>102</u>
<b>Total Cost A/C Type<sup>1/</sup></b>	\$ Mill											
L-1011		67	46	51	80	-	112	-	-	171	143	603
727-200		-	59	-	-	46	-	-	-	-	-	105
DC9-50		-	-	91	-	44	141	74	-	-	-	350
180 Seat M/R		-	-	-	-	-	-	212	318	334	263	1127
<b>Total Cost Aircraft</b>		<u>67</u>	<u>105</u>	<u>142</u>	<u>80</u>	<u>90</u>	<u>253</u>	<u>286</u>	<u>318</u>	<u>505</u>	<u>406</u>	<u>2185</u>
<b>Removals</b>												
	No A/C											
L-1011		1	2	-	-	-	-	-	-	-	-	2
DC9-10/30		-	-	9L	2L	-	-	-	-	1L	-	12
727-100/QC/200		1	-	-	-	-	-	6	10	10+3L	10	39
DCB-61, L-188		2	-	14	-	-	-	-	-	-	5L	19
<b>Total Removals</b>		<u>4</u>	<u>2</u>	<u>23</u>	<u>2</u>	<u>-</u>	<u>-</u>	<u>6</u>	<u>10</u>	<u>14</u>	<u>15</u>	<u>72</u>
<b>P A Y M E N T S 4/</b>												
<b>Flight Eq Payments</b>	\$ Mill											
Advance Deposits	"	53	11	16	71	95	98	117	106	100	90	700
Delivery	"	12	6	-	48	36	101	114	127	202	163	800
Spares, Modifs etc	"	10	13	24	21	19	21	19	27	18	27	190
<b>Total Flt Eq Payments</b>		<u>75</u>	<u>30</u>	<u>40</u>	<u>140</u>	<u>150</u>	<u>220</u>	<u>250</u>	<u>260</u>	<u>320</u>	<u>280</u>	<u>1690</u>
<b>Total Flt Eq Leases<sup>2/</sup></b>	"	21	80	140	-	30	80	90	90	150	120	780
<b>Total Flight Equipment</b>	"	<u>96</u>	<u>110</u>	<u>180</u>	<u>140</u>	<u>180</u>	<u>300</u>	<u>340</u>	<u>350</u>	<u>470</u>	<u>400</u>	<u>2470</u>
<b>GRD, PROP, &amp; EQUIP<sup>3/</sup></b>	"	10	20	25	25	30	30	30	40	40	40	280

NOTES: (L-Leased, all others 70% purchased)

1/ Cost per Aircraft Type - number x cost per aircraft incl base price + CFE/MC/spares. SH&E derived.

2/ Leases - @ 30% of total aircraft cost per year (1979-1984).

3/ Grd. Prop & Equip. - Subject to management reprogramming.

4/ Payments - (SH&E derived; reflect escalation)

Advance Deposits - pre-delivery @ 30% of unit price.

Delivery - balance remaining @ aircraft acceptance

Spares, Modifs, etc - @ 10% of aircraft cost (or derived)

AERO AD: FLT. EQUIP/GPE 1976-1984

E A S T E R N

## C O M M E N T A R Y

### "CAPITAL NEEDS AND SOURCES"

At the end of 1975 Eastern was staring bankruptcy in the face. Its financial ratios were either in or close to being in violation of its loan covenants, all money had been drawn down from its bank revolver, and \$103.6 million in debt was coming due in 1976. To stave off this impending disaster EAL negotiated a \$75 million debt deferral program which included a relaxation of some of its financial tests, and the wage freeze program .

As it turns out EAL would have been able to pay off the debt this year as operating results have been much better than expected. The leasing of the six 727-200s and the probable lease of the L-1011 to be delivered in the fall will help conserve cash. We have projected that EAL will pay off \$60 of the \$75 million this year, but if it wants to cut into working capital, the entire amount could be repaid.

In 1977 EAL's debt due is \$131 million and with earnings declining, and even with the leasing of the nine DC9-50s and the two L-1011s, outside financing of \$50 million is required. 1978's debt retirement is another \$97 million and combined with large advance deposits for new aircraft will force EAL to raise an additional \$120 million externally.

As with all the carriers EAL is facing the problem of underdepreciating its aircraft, i.e. depreciating older planes whose replacement cost has skyrocketed. EAL's cash flow is further hampered by the airline's liberal depreciation policy. In 1975 it actually charged \$6.1 million less for flight equipment depreciation than it would have if it had followed CAB standards.

Due to its relatively weak cash flow EAL must resort to outside financing to meet 47% of its needs. The airline must call on all outside sources of capital, but it should be noted that while EAL will be adding \$710 million in debt between 1976 and 1984, it will in the same time span be amortizing \$700 million.

For the purposes of this study 30% of all incoming flight equipment is leased starting in 1979. If all of this lease financing cannot be arranged, EAL could probably borrow some more, it could cut out the \$110 million in dividends, and it could cut into working capital.

Total capital needs for flight equipment and GPE are \$2.75 billion during the nine year study period. If these outlays are discounted at a 5% rate, the present value of the expenditures is only \$1.9 billion which is considerably less than the \$2.4 billion EAL spent between 1967-1975.

## C O M M E N T A R Y

### "CAPITAL NEEDS AND SOURCES" (Continued)

One major caveat to this whole study is the question of environmental acceptability of aircraft. Our study assumes that Eastern in 1984 will still be flying 143 planes that do not meet FAR part 36 restrictions. If the carrier were to be forced to replace all of these aircraft, it is doubtful that Eastern would be able to get the necessary financing.

### Recap 1976-1984

Needs: \$3.77 billion (66% flight equipment, 7% GPE, 19% debt retirement).

Sources: \$1.92 billion or 51% from operations (18% earnings, 29% depreciation)  
\$1.78 billion or 47% new financing (\$1.58 billion, or 42% to be arranged).

CAPITAL NEEDS AND SOURCES (\$ MILL)

- calendar years -

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984	
	ACTUAL				P R O J E C T E D							
<b>CAPITAL NEEDS</b>												
<u>Flight Equipment Payments</u>												
- Advance Deposits	53	11	16	71	95	98	117	106	100	90	700	
- Delivery	12	6	-	48	36	101	114	127	202	163	800	
- Spares, Modif. etc.	10	13	24	21	19	21	19	27	18	27	190	
Total Flt Equip Payments	75	30	40	140	150	220	250	260	320	280	1690	
Add: Flt Equip Leases	21	80	140	-	30	80	90	90	150	120	780	
Total Flight Equipment	96	110	180	140	180	300	340	350	470	400	2470	
<u>Ground Prop &amp; Eq/Other</u>												
Grd Prop & Equip	10	20	25	25	30	30	30	40	40	40	280	
Debt Retirement	121	34+60	116+15	97	72	70	47	35+25	30+35	30+35	700	
Dividends	-	-	4	-	8	10	13	20	25	25	110	
Other	-	6	-	(2)	-	-	-	-	-	-	-	
Total GPE & Other	131	120	160	120	110	110	90	120	130	130	1090	
End Wkg Cap (3wks COE proj)	73	100	110	120	130	150	160	180	200	210	210	
<b>TOTAL CAPITAL NEEDS</b>	<b>300</b>	<b>330</b>	<b>450</b>	<b>380</b>	<b>420</b>	<b>560</b>	<b>590</b>	<b>650</b>	<b>800</b>	<b>740</b>	<b>3770</b>	
<b>CAPITAL SOURCES</b>												
<u>Beginning Working Capital Operations</u>	118	73	100	110	120	130	150	160	180	200	70	
- Net Earnings (Rept'd)	(50)	45	20	30	60	80	90	110	120	120	680	
- Depreciation/Amort	98	102	103	105	108	112	119	129	142	161	1080	
- Property Sale/Other	33	20	17	15	12	10	21	21	18	19	150	
- Other	8	-	-	-	-	8	-	-	-	-	10	
Total Operations	89	167	140	150	180	210	230	260	280	300	1920	
<u>Financing Arrangements</u>												
- Senior Debt-Banks	40	-	-	80	50	100	20	40	40	40	370	
- " " -Insc0/0thers	13	-	-	-	-	-	50	-	80	40	170	
- Subord Debt			50	-	30	20	20	30	20	-	170	
- Leases (Cap @ AC Cost)	21	80	140	-	30	80	90	90	150	120	780	
- Deposits returnable	19	10	20	-	10	20	30	30	50	40	210	
- Stock Sales	-	-	-	40	-	-	-	40	-	-	80	
Tot Financing Arrangements	93	90	210	120	120	220	210	230	340	240	1780	
<b>TOTAL CAPITAL SOURCES</b>	<b>300</b>	<b>330</b>	<b>450</b>	<b>380</b>	<b>420</b>	<b>560</b>	<b>590</b>	<b>650</b>	<b>800</b>	<b>740</b>	<b>3770</b>	
<b>FINANCING TO BE ARRANGED</b>	<b>-</b>	<b>20</b>	<b>110</b>	<b>110</b>	<b>120</b>	<b>220</b>	<b>210</b>	<b>230</b>	<b>340</b>	<b>240</b>	<b>1580</b>	

AERO AD: CAPITAL NEEDS & SOURCES 1976-1984

E A S T E R N

## C O M M E N T A R Y

### "MONEYABILITY"

Perilously close to bankruptcy at the end of 1975, Eastern is slowly starting to strengthen its terribly weak moneyability posture. Even with \$45 MM of projected 1976 earnings, with no new outside money this year except for lease arrangements, and with \$94 MM in debt retirement (see Capital Needs and Sources schedule), Eastern's key debt/equity ratios are still considerably above the accepted norms at the end of 1976. As the carrier's crucial cash generation ratio gradually rises above the 5 mills norm, and EAL's earnings continue to improve, all of its moneyability ratios by 1981 are finally below the danger levels.

Over the nine year study period total debt plus leases increases \$272 MM with leases accounting for \$263 MM. Actual bank debt will decline \$55 MM as EAL borrows \$370 MM from that source but manages to pay back \$425 MM to the banks. Eastern never qualifies under the N.Y. State Insurance Law so that all other senior money will have to come from senior note issues.

Not having any outside money available at this time, EAL has arranged two year renewable lease deals for the six 727-200s and nine DC9-50s coming into the fleet. Because of their short term, these leases do not have to be included on Eastern's own statements, and thus are not included in the lenders' calculation of leased flight equipment as a percentage of total flight equipment. For this study's purposes the leases are assumed to run for the full 14 years and are included in the lease ratio. As can be seen on the accompanying chart, EAL will be leasing 40% of its flight equipment at the end of 1977 which is way above the 33% limit. Because Eastern does not include these short term leases, it will be able to lease some of the L-1011s already on order.

With its operating ratio never going below 95% Eastern is never able to earn the CAB's 12% ROI standard. However, these projected results will have to make EAL's long-suffering debt and equity holders happier than they have been during the dreadful past decade.

Eastern has been given a new life by a combination of the National strike and a booming traffic surge this year. With this new opportunity Colonel Borman hopes to make EAL a viable, financially sound, carrier. While it will never be as strong as Delta or Northwest, Eastern's moneyability stance will become perfectly adequate if the airline can achieve our projected earnings figures.

"MONEYABILITY"

C O M M E N T A R Y

"MONEYABILITY" (Continued)

N.B. A serious roadblock to Eastern's return to financial health could come about if there is a strict enforcement of the environmental restrictions in FAR Part 36 during the next few years. Most of EAL's fleet has to be replaced or retrofitted, but Eastern's D/E ratios would probably not allow the carrier to take on enough debt to meet the requirements.

"MONEYABILITY" (Continued)

MONEYABILITY - INVESTED CAPITAL  
(System - All Services)

		1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
	UNIT	Actual	P R O J E C T E D									
<b>INVESTED CAPITAL</b>												
Debt	\$ Mil											
Senior Debt - Banks	"	358	284	196	216	231	298	302	309	306	303	(55)
Senior Debt-Insco/Other	"	226	212	175	146	117	88	114	98	167	196	(30)
Senior Debt-Leases Cap'd	"	321	369	461	411	388	409	435	464	541	584	263
Senior Total - Reptd	"	584	496	371	372	348	386	416	407	473	499	(85)
Senior Total + Cap Lses	"	905	865	832	783	736	795	851	871	1014	1083	178
Subordinated	"	147	141	185	177	198	210	224	243	252	241	94
Total Debt - Reptd	"	731	637	556	539	546	596	640	650	725	740	9
Total Debt + Cap Lses	"	1052	1006	1017	950	934	1005	1075	1114	1266	1321	272
<b>Equity</b>												
Stock	"	290	335	351	421	473	543	620	750	845	940	650
Stock + Sub Debt	"	437	476	536	598	671	753	844	993	1097	1181	744
Tot Inv Capital-Reptd	"	1021	972	907	960	1019	1139	1260	1400	1570	1680	659
Tot Inv Capital + Cap Lses	"	1342	1341	1368	1371	1407	1548	1695	1864	2111	2264	922
<b>FLIGHT EQUIPMENT</b>												
Depr Cost	"	753	677	615	612	590	679	783	899	1135	1283	530
Depr Cost + Mfr Deposit	"	813	734	688	724	770	881	1016	1143	1328	1444	631
Depr Cost + " + Cap Lses	"	1134	1103	1149	1135	1158	1290	1451	1607	1869	2028	894
<b>WORKING CAPITAL</b>												
Incl Cur Debt/Equip Wks COE	\$Mill/Wks	73 / 3	100 / 3	110 / 3	120 / 3	130 / 3	150 / 3	160 / 3	180 / 3	200 / 3	210 / 3	137 / -
<b>RATIO ANALYSIS<sup>1/</sup> (G) UNIT/NORM</b>												
Sr Debt ÷ Equity (Stk + Sub)	%-150%	207	182	155	131	110	106	101	88	92	92	(115) pts.
Sr Debt ÷ Fl Eq (Net + Dep + Lse)	%- 80%	80	78	72	69	64	62	59	54	54	53	(27) pts.
Cap Lses Share Flt Eq	%- 33%	28	33	40	36	34	32	30	29	29	29	1 pt
Total Debt ÷ Stock Equity	%-175%	363	300	290	226	197	185	173	149	150	141	(222) pts.
<b>N Y State Ins Law</b>												
Fix Chg Cov - 12 Mos	x-1.5	0.7	1.2	1.1	1.1	1.3	1.5	1.5	1.5	1.52	1.45	0.75x
Fix Chg Cov - 5 yr Avg	x-1.5	0.8	0.9	0.9	1.0	1.1	1.2	1.3	1.4	1.46	1.48	0.68x
Oper Ratio (Airline)	%	100	96	97	97	96	95	95	95	95	95	(5) pts.
Return On Inv (Corp)	%	1.4	8.1	5.9	6.7	8.8	9.7	9.8	10.3	10.0	9.7	8.3 pts.
Rev ÷ Tot Inv Cap	\$	1.21	1.36	1.48	1.65	1.78	1.80	1.81	1.81	1.76	1.79	0.58
Net Cap Comts <sup>2/</sup>	\$ Mil	119	370	375	540	700	760	900	950	900	880	-
Fin Argd / % Argd	"/%	32 / 27	100 / 27	10 / 3	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
<b>Cash Generation</b>												
Flow per \$ Equity	¢/% Chg-30	12 (45)	27 / 125	20 (26)	20 / -	23 / 15	23 / -	22 (4)	22 / -	23 / 5	22 (4)	10 / 83
Rev Less COE	Mills/% Chg-5.00											
per ASM		3.22(43)	5.16 / 60	4.46(14)	4.21(6)	5.06 / 20	5.69 / 12	5.85 / 3	6.23 / 6	6.49 / 4	6.45(1)	3.23 / 100

MONEYABILITY  
AERO:INV. CAPITAL 1976-1984

Note: (G) See Glossary.

- 1/ 12 months basis. % Changes are from end of prior year.  
2/ Net Cap Comts = Next two years projected capital expenditures for flight equipment and GPE.

E A S T E R N

P A R A M E T E R S

----- U.S. TRUNKS & PAA -----		----- NATIONAL -----																									
ECONOMY USA	Strong growth into 1977. Thereafter resumption of secular GNP real growth at 3-4% rate. Inflation rate to be about 5% per year in 1976 and 1977. Thereafter inflation to drop to 3½-4% per year. Unemployment rate to continue slow drop; consumer income and confidence to continue to advance.	DITTO																									
World	Turnaround from recession levels slower than U.S. with inflation rates to continue above USA's.	DITTO																									
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TRAFFIC	Dom RPMs (All Services) Int'l RPMs ( " " )		System ASMs (All Services)																								
CAPACITY	ASMs ad hoc by carrier, but to generally increase at a lower rate than RPMs. 1976-1977 and part of 1978's increase mostly due to seating changes and maximum utilization.																										
LOAD FACTOR	Ad hoc by carrier; generally increasing between 3 and 4 percentage points.		LOAD FACTOR System (All Services) to increase from 51.5% in 1975 to 55.0% by 1984.																								
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COST INCREMENT RATE	Labor (System) (Avg Compens/Empl) Fuel ( " ) (¢ gal) Other ( " ) (Industrial Prices)		Yields - Dom (¢/RPM) " - Int'l ( " )																								
YIELDS	Carriers' need to stay at least even with general inflationary trends, necessitates annual yield increases between 3-5% minimum.																										
EQUIPMENT	Buys to concentrate on presently available aircraft through 1980. By 1981-1982 new technology aircraft parametered in are: 180 seat medium range type 200 seat long range type to help with pressing need for fuel economies and to meet the environmental imperative of the late 1970's and early 1980's.		Buy concentrate on 727-200s, DC-10s and 180 Seat Medium Range type aircraft to allow for continued growth and SM distribution by range and phase-out of 727-100s and older 727-200s not meeting requirements under FAR Part 36.																								
MONEYABILITY	<u>Cost of Capital</u> - Ad hoc by carrier. Prime lending rate at 8-8.5% with carriers paying between ¼ and 1 percent above prime. <u>Availability of Capital</u> - very restricted until deregulation debate is settled. Funds to come from banks, manufacturers and through leasing. Loans from insurance companies restricted to a very few carriers, due to constrained cash generation and earnings outlook.		Ditto  Recovery from two lengthy strikes is very slow on an operating basis. However, improvement in basic earnings position coupled to no flight equipment purchases until 1979, allows carrier to make interim accelerated repayments of bank revolver. No new financing indicated until 1980, and by then all avenues of financing are open to carrier including borrowing from insurance companies from 1977 on. No aircraft leasing parametered into study; this option to finance also available to NAL.																								
CAB	Proposals under Aviation Act of 1975 not parametered into study. AERO ADVANCED will be re-done, when and if the various proposals have been enacted and a time frame is established.		Ditto																								

"EARNINGS"

National has still not recovered from the 127 day flight attendants' strike that it took on last fall. System traffic was down 12% for the first six months of this year (vs. an industry average of plus 12%) and July and August RPMs were also lower than last year's figures. NAL's management decided to scale down its operation when it resumed service this January and to only gradually increase its scope of service. In retrospect this may have been a major mistake. Delta and Eastern were handed a lot of National's traffic and NAL so far has been unable to recapture all of its market share. (NAL lost its popularity with travel agents by having two extended strikes in the past two years). United, which also took on a strike last year, adopted a different post-strike philosophy and resumed its full operation almost immediately. While suffering high losses initially, UAL quickly managed to reduce the length of the typical post-strike recovery period.

Besides having to contend with its labor problems, National has had to face huge fuel price increases this year, as its long-term contracts expired in the middle of last year. Unit fuel costs were up 67% for the 1st 6 months of 1976 but should moderate to 48% for the full year. Unit labor costs will be up another 18%; however, "other" costs on an ASM basis will be down 27% in 1976 ("other" was down only 10% for the 1st 6 mos 1976 but will decline further as NAL flew only 1.95 bil. ASMs during the 2nd half of 1975). Interest costs have been reduced considerably as NAL has paid off some of its bank debt and the prime rate has declined. NAL's 2Q '76 domestic yield increase was the largest in the industry as last year's figure was influenced by the "No-frills" fare. International yields have been very weak and are down 8% for the 6 months ended June, 1976.

In order to insure a profit for fiscal 1976 NAL extended the depreciable lives of 49 of its 53 aircraft. The 727s are now written off over 16 years instead of 12 and the DC-10s 17 years as opposed to 14. NAL's \$14MM in calendar 1976 operating earnings would be wiped out if 1975's depreciation/amortization expense were to be used this year.

In the 1976 annual report Chairman Maytag says that, "We are optimistic, yet cautious about the outlook for fiscal 1977." With unit costs forecasted to increase only 8% in 1977, which should translate into a near doubling in operating earnings; we, too, are optimistic about NAL's near-term outlook. Over the nine year study period NAL's earnings outlook is relatively good but not spectacular. The carrier earns 4.4% on revenues but never earns 12% on its capital. By comparison in 1966 it earned 12% on sales and over 15% on capital. The key ingredients in NAL's success will be its tight control of expenses, its excellent productivity (it has much more flexible work rules in its union contracts than does competitor Eastern), and its fuel efficient fleet.

National hopes to have solved its labor problems by signing a no-strike agreement earlier this year with ALEA which called for binding arbitration, a first in the industry. The carrier also sponsored a seminar to promote better relations between management and the unions. With labor peace guaranteed until 1978 NAL's management has plenty of time to put its new labor relations philosophy to work. NAL does face potential problems as a result of the CAB's recent Transatlantic Case ruling which would add competitors on the Atlantic route.

E A R N I N G S  
- calendar years -

	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
		Actual	P R O J E C T E D									
<b>Revenues</b>												
Passenger	\$Mil	281	407	468	522	578	641	707	777	854	934	5,888
Freight	"	12	20	23	26	28	32	35	38	42	47	291
<b>Total Revenues</b>	"	<u>358</u>	<u>447</u>	<u>510</u>	<u>570</u>	<u>630</u>	<u>700</u>	<u>770</u>	<u>850</u>	<u>930</u>	<u>1,020</u>	<u>6,427</u>
<b>Cash Oper Exp</b>												
Labor	"	108	166	185	210	232	257	285	316	353	394	2,398
Fuel	"	44	89	104	112	123	134	145	156	166	177	1,206
Other	"	138	147	164	177	194	211	229	251	273	297	1,943
<b>Total COE</b>	"	<u>290</u>	<u>402</u>	<u>453</u>	<u>499</u>	<u>549</u>	<u>602</u>	<u>659</u>	<u>723</u>	<u>792</u>	<u>868</u>	<u>5,547</u>
Depr/Amort	"	46	31	31	32	34	37	39	44	53	61	362
<b>Total Oper Exp</b>	"	<u>336</u>	<u>433</u>	<u>484</u>	<u>531</u>	<u>583</u>	<u>639</u>	<u>698</u>	<u>767</u>	<u>845</u>	<u>929</u>	<u>5,909</u>
<b>Oper Earnings</b>	"	<u>22</u>	<u>14</u>	<u>26</u>	<u>39</u>	<u>47</u>	<u>61</u>	<u>72</u>	<u>83</u>	<u>85</u>	<u>91</u>	<u>518</u>
Gross Interest	"	17	10	7	5	6	9	12	16	24	29	118
Pre-Tax Earnings	"	5	4	19	34	41	52	60	67	61	62	400
Inc. Tax	\$Mil	-	1	8	14	16	21	24	26	24	25	159
Eff. Rate	%	8%	25%	40%	40%	40%	40%	40%	40%	40%	40%	40%
<b>Net Earnings</b>												
Airline Operations	\$Mil	5	3	11	20	25	31	36	41	37	37	241
"Nettings"	"	6	6	4	2	3	4	4	4	8	8	43
Reptd to Stockholders	"	<u>11</u>	<u>9</u>	<u>15</u>	<u>22</u>	<u>28</u>	<u>35</u>	<u>40</u>	<u>45</u>	<u>45</u>	<u>45</u>	<u>284</u>
<b>RATIOS</b>												
<b>Traffic (All Services)</b>												
RPMS - DOM	Bil/%Chg	3.58/(7)	4.90/37	5.40/10	5.75/7	6.12/7	6.52/6	6.91/6	7.33/6	7.77/6	8.20/6	4.62/9.6GRC
RPMS - System	" / "	3.88/(6)	5.30/37	5.84/10	6.23/7	6.64/7	7.08/7	7.51/6	7.98/6	8.46/6	8.94/6	5.06/9.7GRC
ASMS - System	" / "	7.53/(7)	10.9/45	11.7/7	12.2/4	12.8/5	13.4/5	14.0/5	14.8/6	15.5/5	16.3/5	8.77/9.0GRC
Load Factor - System	%	51.5	48.6	50.0	51.1	52.0	52.8	53.5	54.0	54.5	55.0	3.5pts
Yield - Dom	¢RPM/%Chg	7.34/(1)	7.76/ 6	8.15/ 5	8.52/5	8.86/4	9.21/4	9.58/4	9.92/3	10.27/4	10.63/3	3.29/4.2GRC
Yield - System	" / "	7.27/(1)	7.62/ 5	8.01/ 5	8.37/5	8.71/4	9.06/4	9.41/4	9.74/3	10.09/4	10.45/3	3.18/4.1RC
<b>COST INCREMENT (COE)</b>												
- Labor (Non-Add)	\$Mil/ %	1/1	25/18	15/9	17/9	17/8	16/7	18/7	21/7	23/7	25/7	177
- Fuel	" / "	10/31	29/48	8/8	7/6	6/5	5/4	5/4	7/4	6/4	6/4	79
- Other	" / "	13/11	(53)/(27)	6/4	7/4	7/4	7/4	8/3	8/4	10/3	10/4	10
- Total	" / "	<u>25/8</u>	<u>1 / NM</u>	<u>29/8</u>	<u>31/7</u>	<u>30/6</u>	<u>28/6</u>	<u>31/6</u>	<u>36/5</u>	<u>39/5</u>	<u>41/6</u>	<u>266</u>
<b>Weighted Index (1967=100)</b>	No / %Chg	<u>197/8</u>	<u>226/NM</u>	<u>245/8</u>	<u>262/7</u>	<u>279/6</u>	<u>295/6</u>	<u>312/6</u>	<u>329/5</u>	<u>347/5</u>	<u>367/6</u>	<u>170/7.2GRC</u>

AERO AD:EARNINGS. 1976-1984

N A T I O N A L

## C O M M E N T A R Y

### "FLIGHT EQUIPMENT"

In selling its two 747s to Northwest earlier this year National has joined Continental as the only trunk carriers to operate just two types of aircraft. National's 727s and DC-10s are well suited to its route structure which has the shortest average flight length in the industry.

By increasing seating (the equivalent of 5 727s) and utilization on its existing fleet, National will not need any additional capacity until 1979. However, it is possible that NAL's management may order some 727-200s before then in order to stage a flight frequency battle with its two main competitors in the strategic Northeast-Florida market. We order only 4 DC-10-10s for NAL as the 4 DC-10-30s on hand will be able to supply all of the capacity needed on the Atlantic. (NAL is using less than 2 of the Intercontinental DC-10s on the route this year.)

Our buys concentrate in the medium-to-short range where NAL flies about 50% of its ASMs. Starting in 1982 we see the carrier replacing its 727-100s with down-ranged 727-200s, and replacing the stretched 727s with the new advanced technology 180 seat aircraft. By the end of 1984 our study shows that National will still be flying 19 727-200s that do not meet the current environmental restrictions. To completely replace these aircraft would cost approximately \$350 MM in 1984 dollars.

N.B. Our 3.5 percentage point increase in the system load factor between 1975-1984 is the second lowest we have projected for any carrier. Assuming that our traffic forecast is correct, it is obvious that National would have to decrease its ASM generation per aircraft (remove seats, lower hourly utilization) or buy less airplanes than we have predicted if it is to raise its load factor above 55%.

"FLIGHT EQUIPMENT"

FLIGHT EQUIPMENT - PURCHASE / REMOVALS / PAYMENTS / LEASES  
GROUND PROPERTY & EQUIPMENT (projected costs)

	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-
		Actual	----- P R O J E C T E D -----									1984
<b>PURCHASES/LEASES (L)</b>												
Additions	No. A/C											
727-200		-	-	-	-	4	4	-	-	-	-	8
DC-10		4	-	-	-	-	-	2	-	-	2	4
180 Seat M/R		-	-	-	-	-	-	-	5	6	4	15
<b>Total Additions</b>		<u>4</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>4</u>	<u>4</u>	<u>2</u>	<u>5</u>	<u>6</u>	<u>6</u>	<u>27</u>
<b>Total Cost A/C Type<sup>1/</sup></b>												
727-200	\$ Mill	-	-	-	-	46	48	-	-	-	-	94
DC-10		84	-	-	-	-	-	62	-	-	71	133
180 Seat M/R		-	-	-	-	-	-	-	139	167	117	423
<b>Total Cost Aircraft</b>		<u>84</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>46</u>	<u>48</u>	<u>62</u>	<u>139</u>	<u>167</u>	<u>188</u>	<u>650</u>
<b>Removals</b>												
DC-8-61/747	No A/C	2	2	-	-	-	-	-	-	-	-	2
727-100		-	-	-	-	-	-	-	6	7	-	13
727-200		-	-	-	-	-	-	-	-	-	6	6
<b>Total Removals</b>		<u>2</u>	<u>2</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>6</u>	<u>7</u>	<u>6</u>	<u>21</u>
<b>P A Y M E N T S 4/</b>												
Flight Eq Payments	\$ Mill											
Advance Deposits	"	28	-	7	14	30	40	42	39	30	30	230
Delivery	"	3	-	-	-	32	34	43	97	117	132	460
Spares, Modifs etc	"	1	2	3	6	8	6	5	4	13	8	50
<b>Total Flt Eq Payments</b>	"	<u>32</u>	<u>2</u>	<u>10</u>	<u>20</u>	<u>70</u>	<u>80</u>	<u>90</u>	<u>140</u>	<u>160</u>	<u>170</u>	<u>740</u>
Total Flt Eq Leases <sup>2/</sup>	"	-	-	-	-	-	-	-	-	-	-	-
<b>Total Flight Equipment</b>	"	<u>32</u>	<u>2</u>	<u>10</u>	<u>20</u>	<u>70</u>	<u>80</u>	<u>90</u>	<u>140</u>	<u>160</u>	<u>170</u>	<u>740</u>
GRD, PROP, & EQUIP <sup>3/</sup>	"	<u>10</u>	<u>8</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>20</u>	<u>20</u>	<u>20</u>	<u>30</u>	<u>140</u>

NOTES: (L- Leased, all others 70% purchased) MR = Medium Range.

1/ Cost per Aircraft Type - number x cost per aircraft incl base price + CFE/MC/spares. SH&E derived.

2/ Leases - None.

3/ Grd. Prop & Equip. - Subject to management reprogramming.

4/ Payments - (SH&E derived; reflect escalation)

Advance Deposits - pre-delivery @ 30% of unit price.

Delivery - balance remaining @ aircraft acceptance

Spares, Modifs, etc - @ 10% of aircraft cost (or derived)

AERO AD: FLT. EQ/GPE 1976-1984

NATIONAL

## C O M M E N T A R Y

### "CAPITAL NEEDS AND SOURCES"

With no aircraft on order, and none needed before 1979, National will not have to borrow any money for three years, 1976-1978. As a matter of fact, the carrier will be able to prepay close to \$100MM of its outstanding revolving credit as cash flow together with the proceeds from the sale of its two 747s far exceeds the carrier's meager needs over the next few years. In 1976 working capital is temporarily raised to 5 weeks of cash operating expenses (it was 7 weeks at 6/30/76) before returning to its normal 3 weeks level in 1977.

Of the \$420MM in projected borrowings the majority will come from a new enlarged bank revolving credit agreement. National has never borrowed from insurance companies, but except in 1976, it does qualify under N.Y. State Insurance Law. All avenues of financing, including leasing and equity offerings, are available to National's financial officer.

By extending the depreciable lives of 49 of its 53 aircraft NAL has improved its reported earnings, but has weakened cash flow. As an example, for the 12 months ended 12/31/75 NAL charged off \$37.4MM to flight equipment depreciation vs. the \$33.6MM the CAB allowed for rate making purposes. After the accounting change, NAL charged off only \$26.7MM for the 12 months ended 6/30/76 vs. the \$34.7MM the CAB's standards allowed. Under-depreciating its assets is one of the major problems facing the airline industry today.

Between 1967-1975 National's capital spending for flight equipment and GPE totaled \$636MM. Our 1976-1984 forecast shows the carrier spending \$880MM for the same items, but if these outlays are discounted at a 5% rate, the resulting present value is only \$667MM, or very close to what was spent in the previous 9 years.

#### Recap: 1976-1984

Needs: \$1.2 billion (62% flight equipment, 12% GPE, 17% debt retirement).  
Sources: \$750 million or 63% from operations (24% earnings, 30% depreciation).  
\$420 million or 35% new financing (33% to be arranged).

"CAPITAL NEEDS AND SOURCES"

CAPITAL NEEDS AND SOURCES (\$ MILL)  
- calendar years -

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976- 1984	
	ACTUAL				P R O J E C T E D							
<b>CAPITAL NEEDS</b>												
<u>Flight Equipment Payments</u>												
- Advance Deposits	28	-	7	14	30	40	42	39	30	30	230	
- Delivery	3	-	-	-	32	34	43	97	117	132	460	
- Spares, Modif. etc.	1	2	3	6	8	6	5	4	13	8	50	
Total Flt Equip Payments	32	2	10	20	70	80	90	140	160	170	740	
Add: Flt Equip Leases	-	-	-	-	-	-	-	-	-	-	-	
Total Flight Equipment	32	2	10	20	70	80	90	140	160	170	740	
<u>Ground Prop &amp; Eq/Other</u>												
Grd Prop & Equip	10	8	10	10	10	10	20	20	20	30	140	
Debt Retirement	17	4+49	4+30	4+20	4	24	32	31	1	-	203	
Dividends	4	4	4	6	6	6	8	9	9	10	62	
Other	-	3	2	-	-	-	-	-	-	-	5	
Total GPE & Other	31	68	50	40	20	40	60	60	30	40	410	
End Wkg Cap (3wks COE proj)	30	40	30	30	30	40	40	40	50	50	50	
<b>TOTAL CAPITAL NEEDS</b>	<b>93</b>	<b>110</b>	<b>90</b>	<b>90</b>	<b>120</b>	<b>160</b>	<b>190</b>	<b>240</b>	<b>240</b>	<b>260</b>	<b>1,200</b>	
<b>CAPITAL SOURCES</b>												
<u>Beginning Working Capital</u>	25	30	40	30	30	30	40	40	40	50	30	
<u>Operations</u>												
- Net Earnings (Rept'd)	11	9	15	22	28	35	40	45	45	45	284	
- Depreciation/Amort	46	31	31	32	34	37	39	44	53	61	362	
- Property Sale/Other	11	40	4	2	-	3	1	11	12	21	94	
- Other	-	-	-	4	(2)	5	-	-	-	3	10	
Total Operations	69	80	50	60	60	80	80	100	110	130	750	
<u>Financing Arrangements</u>												
- Senior Debt-Banks	-	-	-	-	30	50	70	80	40	10	280	
- " " -InSCO/Others	-	-	-	-	-	-	-	-	50	50	100	
- Subord Debt	-	-	-	-	-	-	-	20	-	20	40	
- Leases (Cap @ AC Cost)	-	-	-	-	-	-	-	-	-	-	-	
- Deposits returnable	-	-	-	-	-	-	-	-	-	-	-	
- Stock Sales	-	-	-	-	-	-	-	-	-	-	-	
Tot Financing Arrangements	-	-	-	-	30	50	70	100	90	80	420	
<b>TOTAL CAPITAL SOURCES</b>	<b>93</b>	<b>110</b>	<b>90</b>	<b>90</b>	<b>120</b>	<b>160</b>	<b>190</b>	<b>240</b>	<b>240</b>	<b>260</b>	<b>1,200</b>	
<b>FINANCING TO BE ARRANGED</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>50</b>	<b>70</b>	<b>100</b>	<b>90</b>	<b>80</b>	<b>390</b>	

AERO AD: CAPITAL NEEDS & SOURCES 1976-1984

N A T I O N A L

## C O M M E N T A R Y

### "MONEYABILITY"

Even though it has suffered through two long, costly strikes during the past two years, National still retains one of the premiere "Moneyability" postures in the industry. With excess cash flow forecast for the 1976-1978 period (see Capital Needs and Sources schedule) NAL's ratios will improve even further during the next few years.

Cash generation per ASM does decline precipitously this year before bouncing back in 1977 and then crossing the important 5 Mills barrier in 1978. National's cash flow permits it to take on less than one dollar of debt for every additional dollar of equity during the 1976-1984 period.

National's operating ratio never falls below 90% which results in the carrier never earning the CAB's standard of 12% on its capital. The revenue to invested capital ratio goes up dramatically over the next few years because of the shrinking investment base. With new borrowings forecast from 1979 on, the investment base swells and the aforementioned ratio declines steadily.

Except in 1976, when it temporarily fails to qualify under the N.Y. State Insurance Law, National has all avenues of financing available to it. As was predicted in last year's Aero Advanced study, National did extend its current bank revolving credit agreement to terminate now in 1982. Because of its strong balance sheet and the absence of JT3-D powered aircraft in its fleet, National would have relatively little problem if there were to be an immediate tightening of environmental standards.

"MONEYABILITY"

MONEYABILITY - INVESTED CAPITAL  
(System - All Services)

	UNIT	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
		Actual	P R O J E C T E D									
<b>INVESTED CAPITAL</b>												
<b>Debt</b>	\$ Mil											
Senior Debt - Banks	"	149	100	70	50	80	110	150	200	240	250	101
Senior Debt-Insc0/Other	"	-	-	-	-	-	-	-	-	50	100	100
Senior Debt-Leases Cap'd	"	-	-	-	-	-	-	-	-	-	-	-
Senior Total - Reptd	"	149	100	70	50	80	110	150	200	290	350	201
Senior Total + Cap Lses	"	149	100	70	50	80	110	150	200	290	350	201
Subordinated	"	23	19	16	12	8	4	2	21	20	40	17
Total Debt - Reptd	"	172	119	86	62	88	114	152	221	310	390	218
Total Debt + Cap Lses	"	172	119	86	62	88	114	152	221	310	390	218
<b>Equity</b>												
Stock	"	192	197	208	224	246	275	307	343	379	414	222
Stock + Sub Debt	"	215	216	224	236	254	279	309	364	399	454	239
Tot Inv Capital-Reptd	"	364	316	294	286	334	389	459	564	689	804	440
Tot Inv Capital + Cap Lses	"	364	316	294	286	334	389	459	564	689	804	440
<b>FLIGHT EQUIPMENT</b>												
Depr Cost	"	374	318	293	268	287	306	337	435	552	684	310
Depr Cost + Mfr Deposit	"	374	318	300	289	325	369	424	519	616	722	348
Depr Cost + " + Cap Lses	"	374	318	300	289	325	369	424	519	616	722	348
<b>WORKING CAPITAL</b>												
Incl Cur Debt/Equiv Wks COE	\$Mill/Wks	30/5	40/5	30 /3	30 /3	30 /3	40/3	40/3	40 /3	50 /3	50/3	20 / (2)
<b>RATIO ANALYSIS<sup>1/</sup> (G) UNIT/NORM</b>												
Sr Debt ÷ Equity (Stk + Sub)	%-150%	69	46	31	21	32	39	49	55	73	77	8pts.
Sr Debt ÷ Fl Eq (Net + Dep + Lse)	%- 80%	40	31	23	17	25	30	35	39	47	48	8pts.
Cap Lses Share Flt Eq	%- 33%	-	-	-	-	-	-	-	-	-	-	-
Total Debt ÷ Stock Equity	%-175%	90	60	41	28	36	41	50	64	82	94	4pts.
<b>N Y State Ins Law</b>												
Fix Chg Cov - 12 Mos	x- 1.5	1.2	1.1	1.8	2.4	2.6	2.8	2.8	2.8	2.3	2.2	1.0x
Fix Chg Cov - 5 yr Avg	x- 1.5	1.7	1.6	1.6	1.7	1.8	2.1	2.5	2.7	2.7	2.6	0.9x
Oper Ratio (Airline)	%	94	97	95	93	93	91	91	90	91	91	(3)pts.
Return On Inv (Corp)	%	7.5	6.0	7.5	9.4	10.2	11.3	11.3	10.8	10.0	9.2	1.7pts.
Rev ÷ Tot Inv Cap	\$	0.98	1.41	1.73	1.99	1.89	1.80	1.68	1.51	1.35	1.27	0.29
Net Cap Comts <sup>2/</sup>	\$ Mil	10	50	110	170	200	270	340	380	400	370	-
Fin Argd / % Argd	"/%	51 /410	72 /144	72/65	62 /36	9 /5	-/-	-/-	-/-	- /-	-/-	-/-
<b>Cash Generation</b>												
Flow per \$ Equity	¢/% Chg-30	24 / (20)	16 / (33)	19/19	22 /16	23/5	24/4	24/-	23/ (4)	23/-	22/ (4)	(2) / (8)
Rev Less COE per ASM	Mills/% Chg-5.00	9.02/ (20)	4.15/ (54)	4.88/18	5.79/19	6.32/9	7.30/16	7.90/8	8.61/9	8.93/4	9.34/5	0.32/4

Note: (G) See Glossary.

1976-1984  
AERO Moneyability-Inv. Capital

<sup>1/</sup> 12 months basis. % Changes are from end of prior year.

<sup>2/</sup> Net Cap. Comts = Next two years projected capital expenditures for flight equipment and GPE.

N A T I O N A L

P A R A M E T E R S

----- U.S. TRUNKS & PAA -----

----- NORTHWEST -----

**ECONOMY USA** Strong growth into 1977. Thereafter resumption of secular GNP real growth at 3-4% rate. Inflation rate to be about 5% per year in 1976 and 1977. Thereafter inflation to drop to 3½-4% per year. Unemployment rate to continue slow drop; consumer income and confidence to continue to advance.

DITTO

**World** Turnaround from recession levels slower than U.S. with inflation rates to continue above USA's.

DITTO

		<u>1975-1980</u>	<u>1980-1984</u>
		<u>Growth Rate Compounded "GRC"</u>	
<b>TRAFFIC</b>	Dom RPMs (All Services)	7.5%	6.1%
	Int'l RPMs ( " " )	9.3%	7.4%
<b>CAPACITY</b>	ASMs ad hoc by carrier, but to generally increase at a lower rate than RPMs. 1976-1977 and part of 1978's increase mostly due to seating changes and maximum utilization.		
<b>LOAD FACTOR</b>	Ad hoc by carrier; generally increasing between 3 and 4 percentage points.		

		<u>1975-1980</u>	<u>1980-1984</u>
		<u>Growth Rate Compounded "GRC"</u>	
Dom RPMs (All Services)		7.9%	6.0%
	Int'l RPMs ( " " )	8.1%	6.6%
System ASMs (All Services)		5.5%	5.6%
<b>LOAD FACTOR</b>	System (All Services) to increase from 46.4% in 1975 to 53.0% by 1984.		

		<u>1976-1984</u>
		<u>"GRC"</u>
<b>COST</b>	Labor (System) (Avg Compens/Empl)	7.7%
<b>INCREMENT</b>	Fuel ( " ) (¢ gal)	5.3%
	Other ( " ) (Industrial Prices)	4.2%
<b>YIELDS</b>	Carriers' need to stay at least even with general inflationary trends, necessitates annual yield increases between 3-5% minimum.	

		<u>1976-1984</u>
		<u>"GRC"</u>
Labor (System) (Avg Compens/Empl)		8.5%
Fuel ( " ) (¢ gal)		4.6%
Other ( " ) (Industrial Prices)		4.6%
Yields - Dom (¢/RPM)		3.9%
" - Int'l (")		4.9%

**EQUIPMENT** Buys to concentrate on presently available aircraft through 1980. By 1981-1982 new technology aircraft parametered in are:  
 180 seat medium range type  
 200 seat long range type  
 to help with pressing need for fuel economies and to meet the environmental imperative of the late 1970's and early 1980's.

Buys concentrate on advanced 727-200's, DC-10-40's, 747's and 180 seat medium range type to allow for growth and phase-out of 707-320 fleet, 727-100's and older 727-200's not meeting requirements under FAR Part 36. Carrier has, next to Continental, strongest widebody posture (over 70% of ASMs in 1976) of all domestic airlines.

**MONEYABILITY** Cost of Capital - Ad hoc by carrier. Prime lending rate at 8-8.5% with carriers paying between ¼ and 1 percent above prime.  
Availability of Capital - very restricted until deregulation debate is settled. Funds to come from banks, manufacturers and through leasing. Loans from insurance companies restricted to a very few carriers, due to constrained cash generation and earnings outlook.

DITTO

Superb earnings posture together with depreciation and aircraft sales, allows carrier to repay all debt currently outstanding and to finance all needs from internal sources. Carrier has excess working capital during study period, which should be used for diversification or in a merger.

**CAB** Proposals under Aviation Act of 1975 not parametered into study. AERO ADVANCED will be re-done, when and if the various proposals have been enacted and a time frame is established.

DITTO  
 Impact of Transatlantic Route case not parametered into study pending final decision.

## C O M M E N T A R Y

### "EARNINGS"

Northwest's 1976 operating earnings will be almost double last year's figure, but due to a higher tax rate (the carrier will not be benefiting from the investment tax credit this year), the net result will not be as spectacular. 1977 looks to be a record year for NWA as earnings approach \$100 million.

RPM growth on a system basis should be up about 12% this year, and combined with a 5% yield increase, will produce a 17% gain in passenger revenues. NWA's cargo business is booming and revenues in that area will be up 43%. Total operating revenues will approach \$1 billion this year.

NWA's unit costs are expected to rise 9% this year with labor costs leading the way with a 18% increase. The big jump in labor costs is the result of the numerous collective bargaining agreements that NWA signed last year. NWA's unit fuel cost will rise only 4% as the carrier has already bitten the bullet in this area and is paying more than the industry average. The airline is keeping ASMs in check this year which should produce a 2.1% increase in the carrier's load factor.

Northwest's excellent long-term earnings prospects (over 20% GRC) are more a result of strict controls over expenses rather than an extraordinary rise in revenues. Labor cost increases are held in check through the unusually high productivity of NWA's employees (1.95 MM ASM/employee vs. an industry average of 1.15 in 1975). Having wide-bodies fly over 70% of its ASMs, NWA has one of the most fuel efficient fleets and is better able to absorb any fuel price increases. The carrier's hard-nosed management is well-known for despising overhead, and as a result, NWA's "Other" costs are the lowest in the industry (1.17¢/ASM in the first quarter of 1976 vs. an industry average of 1.55¢). Northwest's equipment and its management of costs permits the carrier to make substantial profits while flying with the lowest load factor in the industry. For the 12 months ended 3/31/76 NWA's system scheduled passenger break-even load factor was 41.6% while the industry averaged 55.0%.

Other items which keep expenses down and profits up include management's decision to strive for commonality among its aircraft which reduces inventories, maintenance, and training costs. As Northwest pays off its debt (see other schedules) interest expense is reduced to zero and totals only \$64 MM for the nine years. The carrier records substantial capital gains on its used aircraft as it writes the planes off quickly, and sells them as soon thereafter as possible.

Even with this optimistic forecast it should be noted that NWA's peak profit margin is 10.9% in 1982 and its highest ROI is 14.3% in the same year. Back in 1965 NWA earned 17.4¢ on every dollar of revenue and the carrier made more than 20% on its investment between 1964-1966.

EARNINGS

- calendar years -

	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
		Actual	P r o j e c t e d									
<b>Revenues</b>												
Passenger	\$Mil	679	795	896	1002	1113	1238	1370	1504	1659	1817	11,394
Freight	"	89	127	149	168	187	207	228	250	276	303	1,895
<b>Total Revenues</b>	"	<u>815</u>	<u>970</u>	<u>1100</u>	<u>1230</u>	<u>1365</u>	<u>1500</u>	<u>1670</u>	<u>1830</u>	<u>2030</u>	<u>2230</u>	<u>13,925</u>
<b>Cash Oper Exp</b>												
Labor	"	223	265	295	330	369	413	463	517	578	647	3,817
Fuel	"	188	208	227	254	272	291	316	342	373	413	2,696
Other	"	255	299	328	361	398	438	480	521	571	627	4,023
<b>Total COE</b>	"	<u>666</u>	<u>772</u>	<u>850</u>	<u>945</u>	<u>1039</u>	<u>1142</u>	<u>1259</u>	<u>1380</u>	<u>1522</u>	<u>1687</u>	<u>10,596</u>
Depr/Amort	"	99	102	102	105	105	106	116	131	149	171	1,087
<b>Total Oper Exp</b>	"	<u>765</u>	<u>874</u>	<u>952</u>	<u>1050</u>	<u>1144</u>	<u>1248</u>	<u>1375</u>	<u>1511</u>	<u>1671</u>	<u>1858</u>	<u>11,683</u>
<b>Oper. Earnings</b>	"	<u>50</u>	<u>96</u>	<u>148</u>	<u>180</u>	<u>221</u>	<u>252</u>	<u>295</u>	<u>319</u>	<u>359</u>	<u>372</u>	<u>2,242</u>
Gross Interest	"	19	18	12	8	8	8	6	3	1	-	64
<b>Pre-Tax Earnings</b>	"	<u>31</u>	<u>78</u>	<u>136</u>	<u>172</u>	<u>213</u>	<u>244</u>	<u>289</u>	<u>316</u>	<u>358</u>	<u>372</u>	<u>2,178</u>
Inc. Tax	\$Mil	2	37	57	78	96	110	130	142	161	167	978
Eff. Rate	%	8%	47%	42%	45%	45%	45%	45%	45%	45%	45%	45%
<b>Net Earnings</b>												
Airline Operations	\$Mil	29	41	79	94	117	134	159	174	197	205	1,200
"Nettings"	"	14	19	21	26	23	26	21	26	23	25	210
<b>Reptd to Stockholders</b>	"	<u>43</u>	<u>60</u>	<u>100</u>	<u>120</u>	<u>140</u>	<u>160</u>	<u>180</u>	<u>200</u>	<u>220</u>	<u>230</u>	<u>1,410</u>
<b>RATIOS</b>												
<b>Traffic (All Services)</b>	Bil/%Chg											
RPMS - DOM	" / "	7.05/ 2	7.92/13	8.48/ 7	9.05/ 7	9.64/ 7	10.3/ 7	10.9/ 6	11.6/ 6	12.2/ 6	13.0/ 6	5.95/7.0 GRC
RPMS - System	" / "	9.98/ -	11.2/12	12.0/ 7	12.8/ 7	13.7/ 7	14.6/ 7	15.6/ 7	16.5/ 6	17.5/ 6	18.6/ 6	8.62/7.2 GRC
ASMS - System	" / "	21.5/ 3	23.0/ 7	23.9/ 4	25.1/ 5	26.5/ 6	28.1/ 6	29.6/ 6	31.2/ 5	33.0/ 6	35.0/ 6	13.5/5.6 GRC
Load Factor - System	%	46.4	48.5	50.0	51.0	51.5	52.0	52.5	53.00	53.0	53.0	6.6pts.
Yield - Dom	¢RPM/%Chg	7.20/ 2	7.45/ 3	7.81/ 5	8.16/ 5	8.48/ 4	8.82/ 4	9.16/ 4	9.44/ 3	9.79/ 4	10.13/ 3	2.93/3.9 GRC
Yield - System	" / "	6.80/ 5	7.13/ 5	7.49/ 5	7.82/ 4	8.14/ 4	8.48/ 4	8.80/ 4	9.10/ 3	9.45/ 4	9.79/ 3	2.99/4.1 GRC
<b>COST INCREMENT (COE)</b>												
- Labor (Non-Add)	\$Mil/ %	25/12	41/18	23/ 8	24/ 8	25/ 7	26/ 7	31/ 7	33/ 7	39/ 7	42/ 7	284
- Fuel	" / "	27/17	8/ 4	14/ 7	15/ 6	13/ 5	11/ 4	13/ 4	13/ 4	14/ 4	17/ 4	118
- Other	" / "	19/ 8	25/ 9	17/ 6	17/ 5	16/ 4	16/ 4	18/ 4	16/ 3	20/ 4	21/ 3	166
- Total	" / "	<u>71/14</u>	<u>74/ 9</u>	<u>54/ 7</u>	<u>56/ 7</u>	<u>54/ 5</u>	<u>53/ 5</u>	<u>62/ 5</u>	<u>62/ 5</u>	<u>73/ 5</u>	<u>80/ 5</u>	<u>568</u>
<b>Weighted Index (1967=100)</b>	No /%Chg	<u>216/14</u>	<u>236/ 9</u>	<u>252/ 7</u>	<u>270/ 7</u>	<u>284/ 5</u>	<u>298/ 5</u>	<u>314/ 5</u>	<u>330/ 5</u>	<u>348/ 5</u>	<u>367/ 5</u>	<u>151/6.1 GRC</u>

AERO AD: EARNINGS 1976-1984

NORTHWEST

## C O M M E N T A R Y

### "FLIGHT EQUIPMENT"

In this year's annual report President Nyrop writes, "fleet superiority represents the single biggest marketing advantage an airline can have in a highly competitive industry." In following this philosophy NWA has assembled one of the most modern fleets in the industry. Nearly three-quarters of the carrier's ASMs are flown with wide-bodied equipment.

Northwest's consistent profitability together with its extremely conservative accounting policy (727s and 707s are depreciated over ten years, DC-10s and 747s over 15 years) has permitted the carrier to turn-over its fleet at a much faster rate than other airlines. Between 1955 and 1975 NWA purchased 216 aircraft while selling 139 planes, an average of 17 aircraft transactions per year. Because of management's philosophy to continually upgrade its equipment, NWA will be one of the least vulnerable airlines to environmental restrictions. In our study only five 727-200s in NWA's 1984 fleet are not meeting FAR Part 36. To replace these aircraft would cost about \$90 MM in 1984 dollars. With all of the excess cash that it will be building up (see other three schedules) NWA will have no problem in meeting any tightening of environmental standards.

Notes: We have not increased seating on any aircraft until 1979-1980. We believe that NWA will be ordering some more 747 freighters in the early 1980's as the plane has worked out very well for the airline in the year that it has been in service. The effects of the recent CAB ruling in the Transatlantic case have not been parametered into the study. If NWA does gain the new European routes, our wide-bodied orders would have to be increased. According to our projections, (see other three schedules) Northwest will be an over-financed carrier starting in the next few years. As a result, we would not be surprised if the carrier buys more aircraft than we had predicted and enters the charter market in a much bigger way.

FLIGHT EQUIPMENT"

FLIGHT EQUIPMENT - PURCHASE / REMOVALS / PAYMENTS / LEASES  
GROUND PROPERTY & EQUIPMENT (projected costs)

	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985-
<u>PURCHASES/LEASES (L)</u>		<u>Actual</u>	<u>- P R O J E C T E D -</u>									
<u>Additions</u>	No. A/C											
727-200		8	-	4*	5	4	4	-	-	-	-	17
747F/747		3F	2*	1F*	-	1	-	3	-	-	-	7
180 Seat M/R		-	-	-	-	-	-	-	8	6	4	18
DC-10-40		-	-	-	-	-	-	-	-	5	3	8
<u>Total Additions</u>		<u>11</u>	<u>2</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>8</u>	<u>11</u>	<u>7</u>	<u>50</u>
<u>Total Cost A/C Type 1/</u>	\$ Mill											
727-200		66	-	41	55	46	48	-	-	-	-	190
747F/747		90	37	39	-	44	-	148	-	-	-	268
180 Seat M/R		-	-	-	-	-	-	-	212	167	117	496
DC-10-40		-	-	-	-	-	-	-	-	186	117	303
<u>Total Cost Aircraft</u>		<u>156</u>	<u>37</u>	<u>80</u>	<u>55</u>	<u>90</u>	<u>48</u>	<u>148</u>	<u>212</u>	<u>353</u>	<u>234</u>	<u>1257</u>
<u>Removals</u>	No A/C											
707-320 B/C		3	3	4	3	-	-	-	-	-	-	10
727-100		-	2	4	6	6	7	7	-	-	-	32
727-200		-	-	-	-	-	-	-	6	6	6	18
<u>Total Removals</u>		<u>3</u>	<u>5</u>	<u>8</u>	<u>9</u>	<u>6</u>	<u>7</u>	<u>7</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>60</u>
<u>P A Y M E N T S 4/</u>												
<u>Flight Eq Payments</u>	\$ Mill											
Advance Deposits	"	37	20	16	28	43	67	80	77	70	80	480
Delivery	"	114	37	56	38	63	34	103	149	247	164	890
Spares, Modifs etc	"	4	3	8	4	4	9	17	14	13	16	90
<u>Total Flt Eq Payments</u>	"	<u>155</u>	<u>60</u>	<u>80</u>	<u>70</u>	<u>110</u>	<u>110</u>	<u>200</u>	<u>240</u>	<u>330</u>	<u>260</u>	<u>1460</u>
<u>Total Flt Eq Leases 2/</u>	"	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
<u>Total Flight Equipment</u>	"	<u>155</u>	<u>60</u>	<u>80</u>	<u>70</u>	<u>110</u>	<u>110</u>	<u>200</u>	<u>240</u>	<u>330</u>	<u>260</u>	<u>1460</u>
<u>GRD, PROP, &amp; EQUIP 3/</u>	"	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>20</u>	<u>20</u>	<u>20</u>	<u>30</u>	<u>30</u>	<u>30</u>	<u>180</u>

NOTES: (L-Leased, all others 70% purchased) M/R = Medium range; F = Freighter.

1/ Cost per Aircraft Type - number x cost per aircraft incl base price + CFE/MC/spares. SH&E derived.

2/ Leases - NONE.

3/ Grd. Prop & Equip. - Subject to management reprogramming.

4/ Payments - (SH&E derived; reflect escalation)

Advance Deposits - pre-delivery @ 30% of unit price.

Delivery - balance remaining @ aircraft acceptance

Spares, Modifs, etc - @ 10% of aircraft cost (or derived)

\* = Firm Order

AERO AD: FLT. EQUIP/GPE 1976-1984

N O R T H W E S T

## C O M M E N T A R Y

### "CAPITAL NEEDS AND SOURCES"

Based on our earnings and flight equipment forecasts, Northwest will not have to borrow any money through 1984 to meet its \$2.7 billion capital needs. In fact, NWA will be generating more cash than it needs and we have had to increase working capital above the three weeks norm to absorb the excess cash.

Northwest's fantastic cash flow (its cash generation ratio reached 15.5 mills) is a product of excellent earnings and a conservative depreciation policy. In 1975 NWA charged \$7 MM more to depreciation expense than it would have if it had followed the CAB's depreciation standard. A unique feature of NWA's cash flow is that earnings account for more than 50% of it; whereas with most carriers, depreciation is the major component of cash flow. The airlines' continual sale of used aircraft is an additional steady source of funds.

We have prematurely retired NWA's \$200 MM bank revolver by the end of 1977. However, we did not prepay the existing \$100 MM term loan which expires in 1983. The carrier could, of course, prepay this debt based on our projections of excess working capital starting in 1977. Dividends are increased almost five-fold during the study period.

NWA's financial officer has a problem fairly unique among the airlines - what to do with excess cash. We have assumed that it will be used for short-term money-market investments, but we would not be surprised if NWA buys more aircraft than we have projected (see Flight Equipment commentary), or if it diversifies outside of the industry.

In putting these capital expenditures in perspective it should be remembered that NWA spent \$1.4 billion on flight and ground equipment over the last nine years. Over the next nine years we have projected outlays of \$1.6 billion, but if these expenditures are discounted at a 5% rate, the resulting present value is only \$1.3 billion, or less than Northwest spent between 1966-1975.

#### Recap: 1976-1984

Needs: \$2.71 billion (54% flight equipment, 7% GPE, 10% debt retirement, 10% dividends, and excess working capital 15%).

Sources: \$2.70 billion or 100% from operations (52% earnings, 40% depreciation, and 7% property sale/other).

"CAPITAL NEEDS AND SOURCES"

CAPITAL NEEDS AND SOURCES (\$ MILL)  
- calendar years -

CAPITAL NEEDS	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-	
	ACTUAL	P R O J E C T E D										1984
<u>Flight Equipment Payments</u>												
- Advance Deposits	37	20	16	28	43	67	80	77	70	80		480
- Delivery	114	37	56	38	63	34	103	149	247	164		890
- Spares, Modif. etc.	4	3	8	4	4	9	17	14	13	16		90
Total Flt Equip Payments	155	60	80	70	110	110	200	240	330	260		1,460
Add: Flt Equip Leases	-	-	-	-	-	-	-	-	-	-		-
Total Flight Equipment	155	60	80	70	110	110	200	240	330	260		1,460
<u>Ground Prop &amp; Eq/Other</u>												
Grd Prop & Equip	10	10	10	10	20	20	20	30	30	30		180
Debt Retirement	15	26+60	3+79	4	-	-	38	50	12	-		270
Dividends	10	10	13	22	28	28	36	36	48	48		270
Other	1	4	5	4	2	2	6	4	-	2		30
Total GPE & Other	36	110	110	40	50	50	100	120	90	80		750
End Wkg Cap (3wks COE proj)	13	40	50+40	60+170	60+270	70+380	70+390	80+370	90+330	100+400		500
TOTAL CAPITAL NEEDS	204	210	280	340	490	610	760	810	840	840		2,710
<u>CAPITAL SOURCES</u>												
<u>Beginning Working Capital Operations</u>	(14)	13	40	90	230	330	450	460	450	420		10
- Net Earnings (Rept'd)	43	60	100	120	140	160	180	200	220	230		1,410
- Depreciation/Amort	99	102	102	105	105	106	116	131	149	171		1,090
- Property Sale/Other	8	30	35	25	15	14	14	19	21	19		190
- Other	10	5	3	-	-	-	-	-	-	-		10
Total Operations	160	197	240	250	260	280	310	350	390	420		2,700
<u>Financing Arrangements</u>												
- Senior Debt-Banks	58	-	-	-	-	-	-	-	-	-		-
- " " -Insko/Others	-	-	-	-	-	-	-	-	-	-		-
- Subord Debt	-	-	-	-	-	-	-	-	-	-		-
- Leases (Cap @ AC Cost)	-	-	-	-	-	-	-	-	-	-		-
- Deposits returnable	-	-	-	-	-	-	-	-	-	-		-
- Stock Sales	-	-	-	-	-	-	-	-	-	-		-
Tot Financing Arrangements	58	-	-	-	-	-	-	-	-	-		-
TOTAL CAPITAL SOURCES	204	210	280	340	490	610	760	810	840	840		2,710
FINANCING TO BE ARRANGED	-	-	-	-	-	-	-	-	-	-		-

AERO AD: CAPITAL NEEDS & SOURCES 1976-1984

N O R T H W E S T

## C O M M E N T A R Y

### "MONEYABILITY"

In an industry that is known for its use of leverage (both financial and operating) Northwest may in the next few years be in the anomalous position of being debt free. At the end of 1978 NWA's only debt could be their \$100 MM term loan (due 1981-1983) now outstanding. However, with \$230 MM in working capital at the end of 1978, NWA could certainly prepay this debt if it so chooses.

Working capital is raised to unusually high levels because the carrier's superb cash flow generates more funds than are needed. Besides prepaying debt, as mentioned above, NWA may decide to use some of this excess cash to buy more equipment and enter the expanding charter markets, and/or to diversify outside of the industry.

Northwest's excellent earnings and cash flow outlook show up vividly in the operating ratio declining to 82%, the return on investment climbing to 14.3%, and the cash generation ratio staying way above the 5 mills norm. It should be noted, however, that back in the mid-1960's, NWA's ratios were even better than these.

NWA's "Moneyability" ratios are the best in the industry. The carrier presently qualifies under the N.Y. State Insurance Law. All avenues of financing are open to NWA's treasurer, but as indicated on the Capital Needs and Sources schedule, there will probably be no reason for NWA to seek external financing.

If one can find a fault with NWA's "Moneyability" posture, it would have to be that the carrier is over-financed. The revenue to invested capital ratio rises in 1976 and 1977 but then flattens out for the next seven years. Also, the cash flow per dollar of equity ratio is very low for such a profitable carrier. This indicates that NWA has too much equity for its size of operation.

As mentioned in last year's Aero Advanced report, the only "Moneyability" problem Northwest has is what to do with its abundant riches.

"MONEYABILITY"

MONEYABILITY - INVESTED CAPITAL  
(System - All Services)

		1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
	UNIT	Actual	Projected									
<b>INVESTED CAPITAL</b>												
<b>Debt</b>	\$ Mil											
Senior Debt - Banks	"	239	179	100	100	100	100	62	12	-	-	(239)
Senior Debt-Insco/Other	"	33	7	4	100	100	100	62	12	-	-	(33)
Senior Debt-Leases Cap'd	"	-	-	-	-	-	-	-	-	-	-	-
Senior Total - Reptd	"	272	186	104	100	100	100	62	12	-	-	(272)
Senior Total + Cap Lses	"	272	186	104	100	100	100	62	12	-	-	(272)
Subordinated	"	-	-	-	-	-	-	-	-	-	-	-
Total Debt - Reptd	"	272	186	104	100	100	100	62	12	-	-	(272)
Total Debt + Cap Lses	"	272	186	104	100	100	100	62	12	-	-	(272)
<b>Equity</b>												
Stock	"	624	674	761	859	971	1103	1247	1411	1583	1765	1141
Stock + Sub Debt	"	624	674	761	859	971	1103	1247	1411	1583	1765	1141
Tot Inv Capital-Reptd	"	896	860	865	959	1071	1203	1309	1423	1583	1765	869
Tot Inv Capital + Cap Lses	"	896	860	865	959	1071	1203	1309	1423	1583	1765	869
<b>FLIGHT EQUIPMENT</b>												
Depr Cost	"	977	915	894	849	844	795	837	931	1150	1230	253
Depr Cost + Mfr Deposit	"	977	935	906	872	884	888	966	1073	1256	1346	369
Depr Cost + " + Cap Lses	"	977	935	906	872	884	888	966	1073	1256	1346	369
<b>WORKING CAPITAL</b>												
Incl Cur Debt/Equip Wks COE	\$Mill/Wks	13 / 1	40 / 3	90 / 5	230 / 13	330 / 15	450 / 20	460 / 19	450 / 17	420 / 14	500 / 15	487 / 14
<b>RATIO ANALYSIS<sup>1/</sup> (G) UNIT/NORM</b>												
Sr Debt ÷ Equity (Stk + Sub)	%-150%	44	28	14	12	10	9	5	1	-	-	(44)pts.
Sr Debt ÷ Fl Eq (Net + Dep + Lse)	%- 80%	28	20	11	11	11	11	6	1	-	-	(28)pts.
Cap Lses Share Flt Eq	%- 33%	-	-	-	-	-	-	-	-	-	-	-
Total Debt ÷ Stock Equity	%-175%	44	28	14	12	10	9	5	1	-	-	(44)pts.
<b>NY State Ins Law</b>												
Fix Chg Cov - 12 Mos	x-1.5	2.0	3.3	5.7	7.6	8.7	9.5	11.2	12.7	14.3	14.3	12.3x
Fix Chg Cov - 5 yr Avg	x-1.5	1.7	2.2	3.1	4.2	5.5	7.0	8.5	9.9	11.3	12.4	10.7x
Oper Ratio (Airline)	%	94	90	87	85	84	83	82	83	82	83	(11)pts.
Return On Inv (Corp)	%	6.9	9.1	12.9	13.3	13.8	14.0	14.2	14.3	14.0	13.0	6.1 pts.
Rev ÷ Tot Inv Cap	\$	0.91	1.13	1.27	1.28	1.27	1.25	1.28	1.29	1.28	1.26	0.35
Net Cap Comts <sup>2/</sup>	\$ Mil	30	170	210	260	350	490	630	650	580	600	-
Fin Argd / % Argd	"/%	61/203	29/17	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
<b>Cash Generation</b>												
Flow per \$ Equity	c/% Chg-30	21/(9)	21/-	24/14	23/(4)	23/-	22/(4)	22/-	22/-	22/-	21/(5)	-/-
Rev Less COE per ASM	Mills/% Chg-5.00	6.93/(17)	8.61/24	10.5/21	11.4/ 8	12.3/8	12.7/4	13.9/9	14.4/4	15.4/7	15.5/1	8.57/124

Note: (G) See Glossary.

1/ 12 months basis. % Changes are from end of prior year.  
2/ Net Cap Comts = Next two years projected capital expenditures for flight equipment and GPE.

MONEYABILITY  
AERO: ~~REV.~~ CAPITAL 1976-1984

NORTHWEST

P A R A M E T E R S

----- U.S. TRUNKS & PAA -----			----- PAN AMERICAN -----																				
<b>ECONOMY USA</b>	Strong growth into 1977. Thereafter resumption of secular GNP real growth at 3-4% rate. Inflation rate to be about 5% per year in 1976 and 1977. Thereafter inflation to drop to 3-4% per year. Unemployment rate to continue slow drop; consumer income and confidence to continue to advance.		Ditto																				
<b>World</b>	Turnaround from recession levels slower than U.S. with inflation rates to continue above USA's.		Ditto																				
<b>TRAFFIC</b>		<table border="1"> <thead> <tr> <th></th> <th>1975-1980 Growth Rate Compounded "GRC"</th> <th>1980-1984 Growth Rate Compounded "GRC"</th> </tr> </thead> <tbody> <tr> <td>Dom RPMs (All Services)</td> <td>7.5%</td> <td>6.1%</td> </tr> <tr> <td>Int'l RPMs ( " " )</td> <td>9.3%</td> <td>7.4%</td> </tr> </tbody> </table>		1975-1980 Growth Rate Compounded "GRC"	1980-1984 Growth Rate Compounded "GRC"	Dom RPMs (All Services)	7.5%	6.1%	Int'l RPMs ( " " )	9.3%	7.4%		<table border="1"> <thead> <tr> <th></th> <th>1975-1980 Growth Rate Compounded "GRC"</th> <th>1980-1984 Growth Rate Compounded "GRC"</th> </tr> </thead> <tbody> <tr> <td>Dom RPMs (All Services)</td> <td>7.9%</td> <td>6.0%</td> </tr> <tr> <td>Int'l RPMs ( " " )</td> <td>9.0%</td> <td>7.6%</td> </tr> </tbody> </table>		1975-1980 Growth Rate Compounded "GRC"	1980-1984 Growth Rate Compounded "GRC"	Dom RPMs (All Services)	7.9%	6.0%	Int'l RPMs ( " " )	9.0%	7.6%	
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<b>CAPACITY</b>	ASMs ad hoc by carrier, but to generally increase at a lower rate than RPMs. 1976-1977 and part of 1978's increase mostly due to seating changes and maximum utilization.		System ASMs (All Services) 6.1% 7.0%																				
<b>LOAD FACTOR</b>	Ad hoc by carrier; generally increasing between 3 and 4 percentage points.		LOAD FACTOR System (All Services) to increase from 52.2% in 1975 to 60.0% by 1984.																				
<b>COST INCREMENT RATE</b>		<table border="1"> <thead> <tr> <th></th> <th>1976-1984 "GRC"</th> </tr> </thead> <tbody> <tr> <td>Labor (System) (Avg Compens/Empl)</td> <td>7.7%</td> </tr> <tr> <td>Fuel ( " ) (¢ gal)</td> <td>5.3%</td> </tr> <tr> <td>Other ( " ) (Industrial Prices)</td> <td>4.2%</td> </tr> </tbody> </table>		1976-1984 "GRC"	Labor (System) (Avg Compens/Empl)	7.7%	Fuel ( " ) (¢ gal)	5.3%	Other ( " ) (Industrial Prices)	4.2%		<table border="1"> <thead> <tr> <th></th> <th>1976-1984 "GRC"</th> </tr> </thead> <tbody> <tr> <td>Labor (System) (Avg Compens/Empl)</td> <td>8.1%</td> </tr> <tr> <td>Fuel ( " ) (¢ gal)</td> <td>5.2%</td> </tr> <tr> <td>Other ( " ) (Industrial Prices)</td> <td>4.2%</td> </tr> </tbody> </table>		1976-1984 "GRC"	Labor (System) (Avg Compens/Empl)	8.1%	Fuel ( " ) (¢ gal)	5.2%	Other ( " ) (Industrial Prices)	4.2%			
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<b>YIELDS</b>	Carriers' need to stay at least even with general inflationary trends, necessitates annual yield increases between 3-5% minimum.		<table border="1"> <tbody> <tr> <td>Yields - Dom (¢/RPM)</td> <td>4.0%</td> </tr> <tr> <td>" - Int'l ( " )</td> <td>3.7%</td> </tr> </tbody> </table>			Yields - Dom (¢/RPM)	4.0%	" - Int'l ( " )	3.7%														
Yields - Dom (¢/RPM)	4.0%																						
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<b>EQUIPMENT</b>	Buys to concentrate on presently available aircraft through 1980. By 1981-1982 new technology aircraft parametered in are: 130 seat medium range type 200 seat long range type to help with pressing need for fuel economies and to meet the environmental imperative of the late 1970's and early 1980's.		Buys concentrate on 747SP, 747B and 200 seat long range types to allow for growth and gradual phase-out of 707-300B&C aircraft. No Concorde operations parametered in for economic reasons.																				
<b>MONEYABILITY</b>	<u>Cost of Capital</u> - Ad hoc by carrier. Prime lending rate at 8-8.5% with carriers paying between ¼ and 1 percent above prime. <u>Availability of Capital</u> - very restricted until deregulation debate is settled. Funds to come from banks, manufacturers and through leasing. Loans from insurance companies restricted to a very few carriers, due to constrained cash generation and earnings outlook.		Ditto  Restructuring of subordinated debt in 1976 plus dramatic earnings improvements from 1978 on will allow PAA to finance most needs internally. Combination of aircraft leasing, some bank and other senior loans plus sale of equity will be most likely financing options to fulfill remaining needs. NYS insurance law fixed charge coverage test met by 1981.																				
<b>CAB</b>	Proposals under Aviation Act of 1975 not parametered into study. AERO ADVANCED will be re-done, when and if the various proposals have been enacted and a time frame is established.		Ditto Impact of Transatlantic Route case and court ruling on Route swap with TWA not evaluated until final decisions.																				

"EARNINGS"

Last year Pan Am's system, all services, yield was up a whopping 15% while the domestic trunk carriers had to settle for a virtually flat year as discount fares eroded their yield base. This year, however, while the trunks are beginning to benefit from rate increases and discount fare reductions, Pan Am is facing an actual decline in its yield as discount RPMs are wiping out all of its fare increases. Scheduled yields in the second quarter were down 6.9% from last year. So, whereas system RPMs will be up 9%, the yield decline will keep revenues from rising more than 8%.

Operating expenses are being held in check by a combination of factors. The route restructuring of the airline has permitted Pan Am to reduce employment 6.6% from the June 30, 1975 figure. The much greater utilization of 747s has reduced fuel consumption and even the price per gallon of fuel has not increased as much as had been expected. Finally, the airline has kept capacity in check (up only 0.5% in the second quarter).

Operating earnings should improve \$36 million over last year, and if the revenue adjustment Pan Am made in 1975 is excluded, the improvement would be \$64 million. However, as simply an operating airline, Pan Am will still be in the red. The \$108 million in "Nettings", which will permit Pan Am to report a record profit, is composed primarily of an \$83 million after-tax gain on its debenture swap.

The longer-term earnings outlook for PAA is quite optimistic for the following reasons:

- 1) International traffic growth will be increasing at a faster rate than domestic RPMs;
- 2) Pan Am's employee productivity will continue to improve faster than that of the domestic trunks because of its route structure and its equipment, and
- 3) Pan Am's fleet is the most fuel efficient in the industry. On a gallon of fuel per ASM basis, Pan Am's aircraft was 10% better than runner-up Northwest in 1975. With the introduction of the 747SPs and the gradual phase out of the 707s Pan Am's fleet will continue to be the industry leader in this key area.

It should be kept in mind that in 1981 Pan Am's earnings of \$160 million is only 4.9% of revenues and the resulting ROI is only 12.8%. The corresponding figures for 1966 were 10.2% and 14.6%.

E A R N I N G S  
- calendar years -

	Unit	1975 Actual	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976- 1984	
- P R O J E C T E D -													
<b>Revenues</b>													
Passenger	\$Mil	1230	1340	1547	1765	2000	2249	2524	2814	3136	3487	20860	
Freight		264	294	327	364	405	450	496	546	602	663	4150	
<b>Total Revenues</b>	"	<u>1674</u>	<u>1807</u>	<u>2037</u>	<u>2314</u>	<u>2610</u>	<u>2930</u>	<u>3283</u>	<u>3652</u>	<u>4063</u>	<u>4510</u>	<u>27200</u>	
<b>Cash Oper Exp</b>													
Labor	"	606	638	723	811	911	1024	1149	1292	1451	1632	9030	
Fuel	"	343	368	402	435	478	522	567	620	688	762	4840	
Other	"	636	682	768	853	950	1058	1177	1305	1460	1626	9880	
<b>Total COE</b>	"	<u>1585</u>	<u>1688</u>	<u>1893</u>	<u>2099</u>	<u>2339</u>	<u>2604</u>	<u>2893</u>	<u>3217</u>	<u>3599</u>	<u>4020</u>	<u>24350</u>	
Depr/Amort	"	124	118	115	125	133	141	148	156	171	191	1300	
<b>Total Oper Exp</b>	"	<u>1709</u>	<u>1806</u>	<u>2008</u>	<u>2224</u>	<u>2472</u>	<u>2745</u>	<u>3041</u>	<u>3373</u>	<u>3770</u>	<u>4211</u>	<u>25650</u>	
Oper. Earnings	"	(35)	1	29	90	138	185	242	279	293	299	1550	
Gross Interest	"	54	48	45	46	49	50	49	48	46	43	420	
Pre-Tax Earnings	"	(89)	(47)	(16)	44	89	135	193	231	247	256	1130	
Inc. Tax	\$Mil	(8)	(25)	(2)	13	27	41	58	81	99	102	390	
Eff. Rate	%	cr	cr	cr	30%	30%	30%	30%	35%	40%	40%	35%	
<b>Net Earnings</b>													
Airline Operations	\$Mil	(81)	(22)	(14)	31	62	94	135	150	148	154	740	
"Nettings"	"	35	108	24	29	28	26	25	20	22	26	310	
<b>Reptd to Stockholders</b>	"	<u>(46)</u>	<u>86</u>	<u>10</u>	<u>60</u>	<u>90</u>	<u>120</u>	<u>160</u>	<u>170</u>	<u>170</u>	<u>180</u>	<u>1050</u>	
<b>RATIOS</b>													
<b>Traffic (All Services)</b>													
RPMS - DOM	Bil/%Chg	" / "	1.75/ 3	1.98/13	2.11/ 7	2.25/ 7	2.40/ 7	2.56/ 7	2.72/ 6	2.88/ 6	3.06/ 6	3.23/ 6	1.48/7.0 GRC
RPMS - System	" / "	" / "	18.2/(9)	19.9/ 9	21.8/ 9	23.7/ 9	25.6/ 8	27.7/ 8	29.9/ 8	32.1/ 7	34.5/ 7	36.9/ 7	18.7/8.2 GRC
ASMs - System	" / "	" / "	34.9/(5)	36.3/ 4	38.4/ 6	41.0/ 7	43.8/ 7	47.0/ 7	50.3/ 7	53.5/ 6	57.5/ 7	61.6/ 7	26.7/6.5 GRC
Load Factor - System	%	" / "	52.2	54.8	56.7	57.6	58.5	59.0	59.5	60.0	60.0	60.0	7.8
Yield - Dom	¢RPM/%Chg	" / "	5.37/13	5.64/ 5	5.88/ 4	6.12/ 4	6.35/ 4	6.61/ 4	6.87/ 4	7.11/ 4	7.36/ 3	7.61/ 4	2.24/4.0 GRC
Yield - System	" / "	" / "	6.78/15	6.73/(1)	7.11/ 6	7.46/ 5	7.80/ 4	8.11/ 4	8.43/ 4	8.76/ 4	9.09/ 4	9.44/ 4	2.66/3.8 GRC
<b>COST INCREMENT (COE)</b>													
- Labor (Non-Add)	\$Mil/ %	" / "	51/10	75/13	60/ 9	60/ 8	68/ 8	66/ 7	75/ 7	86/ 7	94/ 7	107/ 7	691
- Fuel	" / "	" / "	34/11	23/ 7	33/ 9	24/ 6	23/ 5	21/ 4	21/ 4	25/ 4	26/ 4	29/ 4	225
- Other	" / "	" / "	49/ 8	21/ 3	46/ 6	33/ 5	39/ 4	38/ 4	45/ 4	53/ 4	57/ 4	61/ 4	393
- Total	" / "	" / "	<u>134/10</u>	<u>119/ 8</u>	<u>139/ 8</u>	<u>117/ 6</u>	<u>130/ 6</u>	<u>125/ 5</u>	<u>141/ 5</u>	<u>164/ 6</u>	<u>177/ 5</u>	<u>197/ 6</u>	<u>1309</u>
Weighted Index (1967=100)	No /%Chg	" / "	214/10	231/ 8	250/ 8	264/ 6	280/ 6	294/ 5	309/ 5	326/ 6	343/ 5	362/ 6	148/6.0 GRC

AERO AD: Earnings 1976-1984

P A N A M E R I C A N

## C O M M E N T A R Y

### "FLIGHT EQUIPMENT"

As a result of its route restructuring during the last two years, Pan Am has been able to sell off nearly one-third of its older, narrow-body fleet and increase accordingly the role of the 747. This year the 747s, including the five new SPs, will account for 75% of the ASMs flown by the carrier. By utilizing the 747 to its fullest potential, Pan Am is saving money in two key areas: the 747 is much more fuel efficient than the 707; and labor costs can be reduced as not as many employees are needed when one 747 replaces 2½ 707s.

Based on the traffic forecast used for this study (see Earnings schedule), Pan Am will need additional equipment by 1978. Assuming that our earnings forecast is not too far off the mark, SH&E believes that PAA should have little problem in getting creditor approval to buy the aircraft. Additional 747s and SPs are bought to meet RPM/ASM growth and to replace some of the sold-off 707 capacity. By 1982 SH&E believes that there will be an advanced technology 200 seat long-range aircraft which will replace 707s and DC8s. Pan Am will use this aircraft on its lower density routes.

With its cargo business booming this year, PAA has just recently added its third 747 freighter. However, one of the 747Fs is leased and must be returned to World Airways at the end of 1977. SH&E would not be surprised if Pan Am added additional 747Fs to its fleet, particularly if they could buy used 747s and have them converted to a cargo configuration.

By the end of 1984 the 13 727s flying in and out of Berlin will be the only aircraft in Pan Am's fleet that do not meet the environmental requirements of FAR Part 36. Assuming the 727s had to be replaced, it would cost Pan Am about \$100 million in 1984 dollars. By far and away Pan Am in 1984 will have the most modern and fuel efficient fleet of the Big Five.

N.B. It is assumed for the purposes of this study that the current two year leases on the five 747SPs will be extended to 16 years.

"FLIGHT EQUIPMENT"

FLIGHT EQUIPMENT - PURCHASE / REMOVALS / PAYMENTS / LEASES  
GROUND PROPERTY & EQUIPMENT (projected costs)

	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976- 1984
		Actual	----- P R O J E C T E D -----									
<b>PURCHASES/LEASES (L)</b>												
<b>Additions</b>	No. A/C											
747 SP		-	5*L	-	6	4	4	3	-	-	-	22
747 Cargo		-	1*L	-	-	-	-	-	-	-	-	1
747 B		-	-	-	-	2	2	3	4	-	2	13
200 Seat L/R		-	-	-	-	-	-	-	6	12	8	26
<b>Total Additions</b>		<u>-</u>	<u>6</u>	<u>-</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>10</u>	<u>12</u>	<u>10</u>	<u>62</u>
<b>Total Cost A/C Type<sup>1/</sup></b>	\$ Mill											
747 SP		-	142	-	211	148	155	122	-	-	-	778
747 Cargo		-	33	-	-	-	-	-	-	-	-	33
747 B		-	-	-	-	85	89	141	197	-	108	620
200 Seat L/R		-	-	-	-	-	-	-	185	371	260	816
<b>Total Cost Aircraft</b>		<u>-</u>	<u>175</u>	<u>-</u>	<u>211</u>	<u>233</u>	<u>244</u>	<u>263</u>	<u>382</u>	<u>371</u>	<u>368</u>	<u>2247</u>
<b>Removals</b>	No A/C											
707-300 B&C		14	14/2L	5	5	5	7	7	7	2/5L	5/1L	65
727		7	-	-	-	-	-	-	-	-	-	-
707-120/720		5	4	-	-	-	-	-	-	-	-	4
747-100 F		-	-	1L	-	-	-	-	-	-	-	1
<b>Total Removals</b>		<u>26</u>	<u>20</u>	<u>6</u>	<u>5</u>	<u>5</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>6</u>	<u>70</u>
<b>PAYMENTS 4/</b>												
<b>Flight Eq Payments</b>	\$ Mill											
Advance Deposits	"	-	17	85	85	95	125	111	79	60	60	720
Delivery	"	-	-	-	148	93	98	105	153	148	147	890
Spares, Modifs etc	"	57	13	15	17	12	17	14	18	22	23	150
<b>Total Flt Eq Payments</b>	"	<u>57</u>	<u>30</u>	<u>100</u>	<u>250</u>	<u>200</u>	<u>240</u>	<u>230</u>	<u>250</u>	<u>230</u>	<u>230</u>	<u>1760</u>
<b>Total Flt Eq Leases 2/</b>	"	-	175	-	-	70	70	80	110	110	110	725
<b>Total Flight Equipment</b>	"	<u>57</u>	<u>205</u>	<u>100</u>	<u>250</u>	<u>270</u>	<u>310</u>	<u>310</u>	<u>360</u>	<u>340</u>	<u>340</u>	<u>2485</u>
<b>GRD, PROP, &amp; EQUIP 3/</b>	"	<u>12</u>	<u>15</u>	<u>20</u>	<u>20</u>	<u>30</u>	<u>30</u>	<u>30</u>	<u>40</u>	<u>40</u>	<u>40</u>	<u>265</u>

NOTES: (L-Leased, all others 70% purchased)

1/ Cost per Aircraft Type - number x cost per aircraft incl base price + CFE/MC/spares. SH&E derived.

2/ Leases - @ 30% of total aircraft cost per year (1979-1984).

3/ Grd. Prop & Equip. - Subject to management reprogramming.

4/ Payments -(SH&E derived; reflect escalation)

Advance Deposits - pre-delivery @ 30% of unit price.

Delivery - balance remaining @ aircraft acceptance

Spares, Modifs, etc - @ 10% of aircraft cost (or derived)

AERO AD: Flt. Equip/GPE 1976-1984

P A N A M E R I C A N

## C O M M E N T A R Y

### "CAPITAL NEEDS & SOURCES"

Pan Am's cash position is so improved that the airline recently prepaid its remaining bank debt. A combination of leasing the six new 747s, the sale of 707s, and improved operating results will increase Pan Am's working capital (including current debt due) \$45 million during 1976.

With no flight equipment on order for 1977 and debt retirement only \$29 million (the recent debenture swap improved an already manageable mandatory debt amortization schedule) Pan Am will be able to meet all of its capital needs from internal sources. In 1978, however, Pan Am will need \$110 million in outside financing to help pay for the needed six additional SPs. If earnings are as good as predicted (see Earnings schedule), Pan Am could probably go to the stock market to raise some of the needed funds with the remaining money coming from the banks.

Pan Am's cash generation ratio goes over the 5 mills norm in 1978 (see Moneyability schedule) which permits the carrier during the study period to finance 68% of its needs from internal operations. The largest source of outside financing is leasing which accounts for 30% of the value of incoming airplanes between 1979 and 1984. With the earnings that we have projected, Pan Am may decide to lessen its reliance on lease financing (lessors may also lose interest in this type of financing for a variety of reasons). If this does occur, Pan Am should not have too much trouble getting money from other sources as the carrier's ratios are all well below the danger level.

During the nine year study period projected capital expenditures for flight equipment and GPE are \$2.75 billion. If these outlays are discounted back to the present at a 5% rate, the resulting \$2.2 billion is exactly the same amount that Pan Am spent between 1966 and 1975.

#### Recap 1976-1984

Needs: \$3.73 billion (67% flight equipment, 7% GPE, 14% debt retirement, and 6% dividends).  
Sources: \$2.53 billion or 68% from operations (28% earnings, 35% depreciation).  
\$1.13 billion or 30% new financing (\$.92 billion, or 25% to be arranged.)

CAPITAL NEEDS AND SOURCES (\$ MILL)  
- calendar years -

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-
	ACTUAL				P R O J E C T E D						1984
<b>CAPITAL NEEDS</b>											
<u>Flight Equipment Payments</u>											
- Advance Deposits	-	17	85	85	95	125	111	79	60	60	720
- Delivery	-	-	-	148	93	98	105	153	148	147	890
- Spares, Modif. etc.	57	13	15	17	12	17	14	18	22	23	150
Total Flt Equip Payments	57	30	100	250	200	240	230	250	230	230	1760
Add: Flt Equip Leases	-	175	-	-	70	70	80	110	110	110	725
Total Flight Equipment	57	205	100	250	270	310	310	360	340	340	2485
<u>Ground Prop &amp; Eq/Other</u>											
Grd Prop & Equip	12	15	20	20	30	30	30	40	40	40	265
Debt Retirement	90	67+114	29	30	37	33	35	35	37+30	42+30	520
Dividends	-	-	-	-	13	27	35	45	45	45	210
Other	-	9	1	-	-	-	-	-	8	3	20
Total GPE & Other	102	205	50	50	80	90	100	120	160	160	1015
End Wkg Cap (3wks COE proj)	75	120	110	120	130	150	170	190	210	230	230
<b>TOTAL CAPITAL NEEDS</b>	<b>234</b>	<b>530</b>	<b>260</b>	<b>420</b>	<b>480</b>	<b>550</b>	<b>580</b>	<b>670</b>	<b>710</b>	<b>730</b>	<b>3730</b>
<b>CAPITAL SOURCES</b>											
<u>Beginning Working Capital</u>	69	75	120	110	120	130	150	170	190	210	75
<u>Operations</u>											
- Net Earnings (Rept'd)	(46)	86	10	60	90	120	160	170	170	180	1050
- Depreciation/Amort	124	118	115	125	133	141	148	156	171	191	1300
- Property Sale/Other	59	45	15	15	15	20	22	14	19	9	170
- Other	(2)	(2)	-	-	2	9	-	-	-	-	10
Total Operations	135	247	140	200	240	290	330	340	360	380	2530
<u>Financing Arrangements</u>											
- Senior Debt-Banks	30	-	-	70	30	40	-	20	-	-	160
- " " -Insko/Others	-	-	-	-	-	-	-	-	20	-	20
- Subord Debt	-	-	-	-	-	-	-	-	-	-	-
- Leases (Cap @ AC Cost)	-	175	-	-	70	70	80	110	110	110	725
- Deposits returnable	-	33	-	-	20	20	20	30	30	30	180
- Stock Sales	-	-	-	40	-	-	-	-	-	-	40
Tot Financing Arrangements	30	208	-	110	120	130	100	160	160	140	1125
<b>TOTAL CAPITAL SOURCES</b>	<b>234</b>	<b>530</b>	<b>260</b>	<b>420</b>	<b>480</b>	<b>550</b>	<b>580</b>	<b>670</b>	<b>710</b>	<b>730</b>	<b>3730</b>
<b>FINANCING TO BE ARRANGED</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>110</b>	<b>120</b>	<b>130</b>	<b>100</b>	<b>160</b>	<b>160</b>	<b>140</b>	<b>920</b>

AERO AD: Capital Needs & Sources 1976-1984

P A N   A M E R I C A N

## C O M M E N T A R Y

### "MONEYABILITY"

Pan Am's improving fortunes are clearly evident on this schedule. The crucial cash generation ratio goes over the 5 mills norm in 1978 and stays comfortably above that level. As a result of its stronger operating posture, Pan Am is able to reduce its debt load over the nine year period even though the book value of its flight equipment almost doubles during the same time span.

The potential earnings improvement is reflected by the operating ratio falling to 92% and the carrier's ROI reaching 12.8% in 1981. (Pan Am is the only one of the Big 5 carriers in this year's SH&E studies to earn more than the CAB's 12% standard). By 1981 the airline will be meeting the fixed charge coverage test in the N.Y. State Insurance Law and will thus be eligible once again for long-term insurance money.

By selling 14 707s and leasing the 6 new 747s (5 SPs and 1 freighter), Pan Am has gone way above the 33% norm of leased flight equipment to total flight equipment. This rules out the leasing of any of the 6 new SPs to be delivered in 1978. (see Flight Equipment schedule). Starting in 1979 30% of the value of incoming flight equipment is leased for the purposes of this study. If, however, PAA decides not to lease, all other avenues of outside financing should be open to the carrier as all of its key ratios are in good shape.

As opposed to the other Big 5 carriers, PAA would not face a massive financial headache if the environmental restrictions of FAR Part 36 were to be strictly enforced in the next few years. With 75% of its ASMs currently being produced by 747s, Pan Am is much less vulnerable to a forced fleet equipment revamping than the other major carriers.

The recently completed debenture swap has improved Pan Am's "Moneyability" stance by: 1) getting some equity onto the balance sheet; 2) lengthening the carrier's debt maturity; and 3) increasing the possibility, through the lower conversion price, that some of the c.v. debt will be converted into common equity.

"MONEYABILITY"

		1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
<u>INVESTED CAPITAL</u>	<u>UNIT</u>	<u>Actual</u>	<u>PRO J E C T E D</u>									
<u>Debt</u>	<u>\$ Mil</u>											
Senior Debt - Banks	"	30	-	-	70	100	140	140	160	130	100	70
Senior Debt-Insco/Other	"	380	343	317	292	266	240	215	190	185	160	(220)
Senior Debt-Leases Cap'd	"	236	375	342	309	342	373	405	466	516	562	326
Senior Total - Reptd	"	410	343	317	362	366	380	355	350	315	260	(150)
Senior Total + Cap Lses	"	646	718	659	671	708	753	760	816	831	822	176
Subordinated	"	466	351	348	343	332	325	315	305	292	276	(190)
Total Debt - Reptd	"	876	694	665	705	698	705	670	655	607	536	(340)
Total Debt + Cap Lses	"	1112	1069	1007	1014	1040	1078	1075	1121	1123	1098	(14)
<u>Equity</u>												
Stock	"	257	343	353	453	530	623	748	873	998	1133	876
Stock + Sub Debt	"	723	694	701	796	862	948	1063	1178	1290	1409	686
Tot Inv Capital-Reptd	"	1133	1037	1018	1158	1228	1328	1418	1528	1605	1669	536
Tot Inv Capital + Cap Lses	"	1369	1412	1360	1467	1570	1701	1823	1994	2121	2231	862
<u>FLIGHT EQUIPMENT</u>												
Depr Cost	"	696	588	511	617	670	724	789	933	1060	1166	470
Depr Cost + Mfr Deposit	"	712	588	596	724	802	908	1005	1113	1189	1244	532
Depr Cost + " + Cap Lses	"	948	963	938	1033	1144	1281	1410	1579	1705	1806	858
<u>WORKING CAPITAL</u>												
Incl Cur Debt/Equip Wks COE	\$Mill/Wks	75/2	120/4	110/3	120/3	130/3	150/3	170/3	190/3	210/3	230/3	155/1
<u>RATIO ANALYSIS</u> <sup>1/</sup> (G)	<u>UNIT/NORM</u>											
Sr Debt ÷ Equity (Stk + Sub)	%-150%	89	103	94	84	82	79	72	69	64	58	(31) pts.
Sr Debt ÷ Fl Eq (Net + Lse)	%-80%	68	75	70	65	62	59	54	52	49	46	(22) pts.
Cap Lses Share Flt Eq	%-33%	25	39	36	30	30	29	29	30	30	31	6 pts.
Total Debt ÷ Stock Equity	%-175%	433	312	285	224	196	173	144	128	113	97	(336) pts.
<u>N Y State Ins Law</u>												
Fix Chg Cov - 12 Mos	x-1.5	0.3	0.7	0.9	1.3	1.6	1.8	2.1	2.2	2.2	2.2	1.9x
Fix Chg Cov - 5 yr Avg	x-1.5	0.3	0.4	0.5	0.6	1.0	1.3	1.5	1.8	2.0	2.1	1.8x
Oper Ratio (Airline)	%	102	100	99	96	95	94	93	92	93	93	(9) pts.
Return On Inv (Corp)	%	1.5	10.8	5.4	8.4	10.1	11.2	12.8	12.3	11.6	11.4	9.9 pts.
Rev ÷ Tot Inv Cap	\$	1.22	1.28	1.50	1.58	1.66	1.72	1.80	1.83	1.92	2.02	0.80
Net Cap Comts <sup>2/</sup>	\$ Mil	69	390	570	640	680	740	780	760	700	660	-
Fin Argd / % Argd	"/%	60/87	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
<u>Cash Generation</u>												
Flow per \$ Equity	¢/% Chg-30	6/100	14/133	14/-	20/43	23/15	25/9	27/8	26/(4)	25/(4)	24/(4)	18/300
Rev Less COE	Mills/% Chg-5.00											
per ASM		2.55/264	3.28/29	3.75/14	5.24/40	6.19/18	6.94/12	7.75/12	8.13/5	8.07/(1)	7.95/(1)	5.40/212

Note: (G) See Glossary.

Moneyability  
AERO AD: Inv. Capital 1976-1984<sup>1/</sup> 12 months basis. % Changes are from end of prior year.<sup>2/</sup> Net Cap Comts = Next two years projected capital expenditures for flight equipment and GPE.PAN AMERICAN

PARAMETERS

----- U.S. TRUNKS & PAA -----			----- TRANS WORLD -----		
ECONOMY USA	Strong growth into 1977. Thereafter resumption of secular GNP real growth at 3-4% rate. Inflation rate to be about 5% per year in 1976 and 1977. Thereafter inflation to drop to 3½-4% per year. Unemployment rate to continue slow drop; consumer income and confidence to continue to advance.				Ditto
World	Turnaround from recession levels slower than U.S. with inflation rates to continue above USA's.				Ditto
		1975-1980 <u>Growth Rate Compounded "GRC"</u>	1980-1984 <u>"GRC"</u>		
TRAFFIC	Dom RPMs (All Services)	7.5%	6.1%	Dom RPMs (All Services)	7.6%
	Int'l RPMs ( " " )	9.3%	7.4%	Int'l RPMs ( " " )	8.9%
CAPACITY	ASMs ad hoc by carrier, but to generally increase at a lower rate than RPMs. 1976-1977 and part of 1978's increase mostly due to seating changes and maximum utilization.			System ASMs (All Services)	5.9%
LOAD FACTOR	Ad hoc by carrier; generally increasing between 3 and 4 percentage points.			LOAD FACTOR System (All Services) to increase from 54.9% in 1975 to 61.0% by 1984.	6.4%
			1976-1984 <u>"GRC"</u>		1976-1984 <u>"GRC"</u>
COST	Labor (System) (Avg Compens/Empl)		7.7%	Labor (System) (Avg Compens/Empl)	7.7%
INCREMENT	Fuel ( " ) (¢ gal)		5.3%	Fuel ( " ) (¢ gal)	4.8%
RATE	Other ( " ) (Industrial Prices)		4.2%	Other ( " ) (Industrial Prices)	4.0%
YIELDS	Carriers' need to stay at least even with general inflationary trends, necessitates annual yield increases between 3-5% minimum.			Yields - Dom (¢/RPM)	3.9%
				" - Int'l ( " )	3.6%
EQUIPMENT	Buys to concentrate on presently available aircraft through 1980. By 1981-1982 new technology aircraft parametered in are: 180 seat medium range type 200 seat long range type to help with pressing need for fuel economies and to meet the environmental imperative of the late 1970's and early 1980's.			Buys concentrate on 727-200s, L-1011s, 747s and 180 seat medium range type to keep fleet mix in balance. No additional L-1011 sales beyond the two to Saudi Arabia parametered in. By 1984, 145 aircraft still in fleet not meeting FAR Part 36 requirements.	
MONEYABILITY	<u>Cost of Capital</u> - Ad hoc by carrier. Prime lending rate at 8-8.5% with carriers paying between ½ and 1 percent above prime. <u>Availability of Capital</u> - very restricted until deregulation debate is settled. Funds to come from banks, manufacturers and through leasing. Loans from insurance companies restricted to a very few carriers, due to constrained cash generation and earnings outlook.			Ditto	
				Decision to sell (2) L-1011s and equity offering in 1976 help to put a very weak balance sheet into a better position. However, heavy mandatory debt retirements through 1981 and sizable outlays for flight equipment, force TWA to tap <u>all</u> financing markets in the future including a possible additional equity offering. Lease restrictions continue into 1978; NYS ins. law coverage not met until 1982.	
CAB	Proposals under Aviation Act of 1975 not parametered into study. AERO ADVANCED will be re-done, when and if the various proposals have been enacted and a time frame is established.			Ditto	
				Impact of Transatlantic Route case and court ruling on Route swap with PAA not evaluated until final decisions.	

AERO AD: PARAMETERS 1976-1984

TRANS WORLD

## C O M M E N T A R Y

### "EARNINGS"

TWA is making a fine turn-around after last year's disastrous result. Operating earnings for the first six months of 1976 have improved \$57.8 million over last year (even with the damaging strike threat) and with the peak summer months still ahead, should end up about \$95 million higher than in 1975. Strong traffic growth, RPMs were up 12.2% at the half year, together with increasing yields, up 8.2% in June, will increase revenues 13% over 1975. Costs are being held in check by a combination of flat ASMs for the first six months and a lessening impact of inflation on the carrier's costs (for example, TWA's unit cost per gallon of fuel was up only 2% in June over the 1975 figure). TWA's cost increment index for 1976 will be up only 7% versus a 9% increase for American and an 11% hike for United.

"Nettings" will be substantially higher than last year's as a result of foreign exchange gains on the carrier's pound sterling debt, the purchase at a discount of the 6½% income debentures, (see Capital Needs and Sources schedule), improved performance by the Canteen and Hilton subsidiaries, and the elimination of the \$15.7 million loss on the sale of the nine 747s to Iran.

The longer term earnings outlook is modestly optimistic as the operating ratio falls to 94% by 1980 and the carrier's ROI rises to 10.5% in 1981. However, it should be noted that in 1964 TWA's ROI was 13.5%, its operating ratio was 85%, and whereas it earned 8¢ for every sales dollar in 1965, it will be earning less than 4¢ per dollar of revenue in 1981.

"EARNINGS"

E A R N I N G S  
- calendar years -

	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
		Actual					P R O J E C T E D					
<b>Revenues</b>												
Passenger	\$Mil	1540	1747	1982	2227	2485	2770	3073	3395	3746	4121	25,546
Freight		129	150	168	188	209	231	254	280	307	338	2,125
<b>Total Revenues</b>	"	<u>1805</u>	<u>2040</u>	<u>2312</u>	<u>2597</u>	<u>2896</u>	<u>3227</u>	<u>3578</u>	<u>3950</u>	<u>4360</u>	<u>4790</u>	<u>29,750</u>
<b>Cash Oper Exp</b>												
Labor	"	740	791	892	996	1104	1226	1367	1527	1703	1897	11,503
Fuel	"	380	415	469	517	571	623	677	739	808	873	5,692
Other	"	656	711	795	884	977	1081	1194	1320	1455	1596	10,013
<b>Total COE</b>	"	<u>1776</u>	<u>1917</u>	<u>2156</u>	<u>2397</u>	<u>2652</u>	<u>2930</u>	<u>3238</u>	<u>3586</u>	<u>3966</u>	<u>4366</u>	<u>27,208</u>
Depr/Amort	"	11	110	111	111	111	109	112	120	137	152	1,073
Total Oper Exp	"	<u>1887</u>	<u>2027</u>	<u>2267</u>	<u>2508</u>	<u>2763</u>	<u>3039</u>	<u>3350</u>	<u>3706</u>	<u>4103</u>	<u>4518</u>	<u>28,281</u>
Oper. Earnings	"	(82)	13	45	89	133	188	228	244	257	272	1,469
Gross Interest	"	54	56	53	52	54	58	62	69	75	78	557
Pre-Tax Earnings	"	(136)	(43)	(8)	37	79	130	166	175	182	194	912
Inc. Tax	\$Mil	(32)	(10)	(2)	9	20	46	58	61	64	68	314
Eff. Rate	%	cr	cr	cr	25%	25%	35%	35%	35%	35%	35%	34%
<b>Net Earnings</b>												
Airline Operations	\$Mil	(104)	(33)	(6)	28	59	84	108	114	118	126	598
"Nettings"	"	18	43	26	22	21	26	32	36	32	34	272
Reptd to Stockholders	"	<u>(86)</u>	<u>10</u>	<u>20</u>	<u>50</u>	<u>80</u>	<u>110</u>	<u>140</u>	<u>150</u>	<u>150</u>	<u>160</u>	<u>870</u>
<b>RATIOS</b>												
<b>Traffic (All Services)</b>												
	Bil/%Chg											
RPMS - DOM	" / "	14.9 / 4	16.5 / 11	17.7 / 7	18.9 / 7	20.2 / 7	21.5 / 7	22.9 / 6	24.3 / 6	25.8 / 6	27.2 / 6	12.3 / 6.9 GRC
RPMS - System	" / "	22.5 / (2)	24.7 / 10	26.7 / 8	28.7 / 8	30.8 / 7	33.1 / 7	35.4 / 7	37.8 / 7	40.2 / 6	42.8 / 6	20.3 / 7.4 GRC
ASMs - System	" / "	41.0 / (4)	42.3 / 3	45.2 / 7	48.3 / 7	51.4 / 6	54.7 / 7	58.0 / 6	61.9 / 7	66.0 / 6	70.1 / 6	29.1 / 6.1 GRC
Load Factor - System	%	54.9	58.3	59.0	59.5	60.0	60.5	61.0	61.0	61.0	61.0	6.1
Yield - Dom	¢RPM/%Chg	7.06 / -	7.33 / 4	7.70 / 5	8.03 / 4	8.35 / 4	8.68 / 4	9.01 / 4	9.32 / 3	9.65 / 4	9.98 / 3	2.92 / 3.9 GRC
Yield - System	" / "	6.85 / 5	7.08 / 3	7.44 / 5	7.76 / 4	8.05 / 4	8.36 / 4	8.68 / 4	8.99 / 4	9.31 / 4	9.64 / 3	2.79 / 3.9 GRC
<b>COST INCREMENT (COE)</b>												
- Labor (Non-Add)	\$Mil/ %	67 / 10	68 / 9	80 / 10	73 / 8	71 / 7	80 / 7	89 / 7	100 / 7	109 / 7	128 / 7	798
- Fuel	" / "	31 / 9	21 / 5	30 / 7	30 / 6	28 / 5	24 / 4	25 / 4	28 / 4	33 / 4	32 / 4	251
- Other	" / "	70 / 12	34 / 5	36 / 5	34 / 4	36 / 4	42 / 4	46 / 4	45 / 3	49 / 4	54 / 3	376
- Total	" / "	<u>168 / 10</u>	<u>123 / 7</u>	<u>146 / 8</u>	<u>137 / 6</u>	<u>135 / 6</u>	<u>146 / 5</u>	<u>160 / 5</u>	<u>173 / 5</u>	<u>191 / 5</u>	<u>214 / 5</u>	<u>1425</u>
Weighted Index (1967=100)	No / %Chg	219 / 10	234 / 7	252 / 8	267 / 6	282 / 6	297 / 5	312 / 5	328 / 5	345 / 5	364 / 5	145 / 5.8 GRC

AERO AD: EARNINGS 1976-1984

TRANS WORLD

C O M M E N T A R Y

"FLIGHT EQUIPMENT"

With the sale earlier this year of two L-1011s and the indefinite deferral of 14 727-200s (mentioned in 1975's Aero Advanced), TWA will not be accepting any new aircraft until 1978. Assuming the Pan Am-TWA route swap is not undone and the recent CAB ruling in the Transatlantic Case does not take effect in the near future, TWA will be able to generate sufficient ASMs through 1977 by increasing seating and utilization on existing aircraft.

Having sold the nine 747s to Iran last year, TWA is facing an equipment disadvantage on the North Atlantic as more and more of its European competitors' ASMs are being flown with wide-body aircraft. The 17 747s are bought to redress the problem and for use also on the transcontinental markets. The relatively small order for L-1011s could, of course, be increased if TWA decides to purchase stretched Tristars for its Atlantic equipment. The 727-200s and the later 180 seat medium-range aircraft are bought to preserve TWA's ASM/range balance at 3/4 long-range, 1/4 short-to-medium.

It should be noted that SH&E has been very conservative in its removal of airplanes from TWA's Fleet. As a result, 145 aircraft will still be in TWA's 1984 fleet that do not meet the environmental requirements of FAR Part 36. To replace these 24.23 billion ASMs would cost TWA an additional \$1.9 billion on top of the \$2.1 billion in new flight equipment parametered into the study.

"FLIGHT EQUIPMENT"

FLIGHT EQUIPMENT - PURCHASE / REMOVALS / PAYMENTS / LEASES  
GROUND PROPERTY & EQUIPMENT (projected costs)

	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
		Actual	- P R O J E C T E D -									
<u>PURCHASES/LEASES (L)</u>												
Additions	No. A/C											
727-200		-	-	-	5	9	-	-	-	-	-	14
L-1011		6	-	-	-	-	5	-	-	3	4	12
747		-	-	-	-	3	2	2	2	3	5	17
180 Seat M/R		-	-	-	-	-	-	8	9	9	-	26
Total Additions		<u>6</u>	<u>-</u>	<u>-</u>	<u>5</u>	<u>12</u>	<u>7</u>	<u>10</u>	<u>11</u>	<u>15</u>	<u>9</u>	<u>69</u>
<u>Total Cost A/C Type<sup>1/</sup></u>												
	\$ Mill											
727-200		-	-	-	52	98	-	-	-	-	-	150
L-1011		130	-	-	-	-	140	-	-	98	137	375
747		-	-	-	-	134	93	98	99	155	271	850
180 Seat M/R		-	-	-	-	-	-	211	239	251	-	701
Total Cost Aircraft		<u>130</u>	<u>-</u>	<u>-</u>	<u>52</u>	<u>232</u>	<u>233</u>	<u>309</u>	<u>338</u>	<u>504</u>	<u>408</u>	<u>2076</u>
<u>Removals</u>												
	No A/C											
747		9	-	-	-	-	-	-	-	-	-	-
727QC		-	-	-	-	-	-	-	-	2L	-	2
707-120B		-	-	-	-	-	-	-	5	3/2L	5	15
707-320 series		1	-	-	5	5	-	-	-	6L	5	21
Total Removals		<u>10</u>	<u>-</u>	<u>-</u>	<u>5</u>	<u>5</u>	<u>-</u>	<u>-</u>	<u>5</u>	<u>13</u>	<u>10</u>	<u>38</u>
<u>P A Y M E N T S 4/</u>												
Flight Eq Payments	\$ Mill											
Advance Deposits	"	32	-	42	95	94	100	100	129	90	80	730
Delivery	"	74	-	-	36	93	93	124	135	201	163	845
Spares, Modifs etc	"	30	20	18	19	23	17	26	26	29	27	205
Total Flt Eq Payments	"	<u>136</u>	<u>20</u>	<u>60</u>	<u>150</u>	<u>210</u>	<u>210</u>	<u>250</u>	<u>290</u>	<u>320</u>	<u>270</u>	<u>1780</u>
Total Flt Eq Leases <sup>2/</sup>	"	-	-	-	-	70	70	90	100	150	120	600
Total Flight Equipment	"	<u>136</u>	<u>20</u>	<u>60</u>	<u>150</u>	<u>280</u>	<u>280</u>	<u>340</u>	<u>390</u>	<u>470</u>	<u>390</u>	<u>2380</u>
GRD, PROP, & EQUIP <sup>3/</sup>	"	<u>12</u>	<u>30</u>	<u>30</u>	<u>30</u>	<u>30</u>	<u>40</u>	<u>40</u>	<u>40</u>	<u>40</u>	<u>50</u>	<u>330</u>

NOTES: (L-Leased, all others 70% purchased)

1/ Cost per Aircraft Type - number x cost per aircraft incl base price + CFE/MC/spares. SH&E derived.

2/ Leases - @ 30% of total aircraft cost per year (1979-1984).

3/ Grd. Prop & Equip. - Subject to management reprogramming.

4/ Payments - (SH&E derived; reflect escalation)

Advance Deposits - pre-delivery @ 30% of unit price.

Delivery - balance remaining @ aircraft acceptance

Spares, Modifs, etc - @ 10% of aircraft cost (or derived)

AERO AD: FLT. EQUIP/GPE 1976-1984

T R A N S W O R L D

"CAPITAL NEEDS AND SOURCES"

Not meeting the "incurrence tests" in its loan agreements TWA is unable to borrow any money at this time. There is also a question of whether or not the airline is complying with the "maintenance tests" in its loan covenants. Fortunately for TWA, it does not need to borrow any money this year as a result of the L-1011 sale and improved operating results.

1976 capital expenditures are a minimal \$50 million (\$20 million for spares and modifications, \$30 million for ground property and equipment). Combining the above with the \$89 million in mandatory debt retirement and \$11 million for miscellaneous items, TWA's needs, excluding ending working capital, are only \$150 million. TWA can fulfill this need by generating \$144 million from operations and by cutting into beginning working capital. SH&E believes that the postponed TWA stock offering will be increased in size and bring in about \$50 million. This additional cash will be used to buy back about \$30 million of outstanding 6½% subordinated income debentures and to increase working capital to four weeks of cash operating expenses.

1977 capital needs can be met totally from operations. By 1978 TWA will need \$90 million in outside financing. Taking into account the airline's Sr. D/E ratio, its inability to lease, and its improving earnings, TWA will probably offer more stock and issue some senior notes.

The \$1.6 billion that TWA will need in external financing over the study period will have to come from all of the carrier's outside money sources. Leasing will account for \$790 million, or 30% of incoming flight equipment starting in 1979. It should be noted that while TWA will be borrowing \$710 million during the study period it will be amortizing \$700 million of debt over the same time span.

TWA's cash flow is hampered by the carrier's very liberal depreciation policy (for book reporting it writes off aircraft slower than the CAB's ratemaking standards) and the relatively few aircraft being added to the fleet during the next five years. As with all the carriers, TWA faces the problem of under-depreciating its current fleet in relation to the cost of replacement aircraft.

TWA will be spending \$2.71 billion for flight equipment and GPE between 1976 and 1984. If this total is discounted back to the present at a 5% rate, the resulting figure of \$1.97 billion is actually considerably less than the \$2.5 billion TWA spent during the past nine years.

C O M M E N T A R Y

"CAPITAL NEEDS AND SOURCES" (Continued)

Recap 1976-1985

Needs: \$3.79 billion (63% flight equipment, 9% GPE, 18% debt retirement, and 3% dividends)

Sources: \$2.07 billion or 55% from operations (23% earnings, 28% depreciation)  
\$1.60 billion or 42% new financing.

CAPITAL NEEDS AND SOURCES (\$ MILL)  
- calendar years -

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984	
	ACTUAL				P R O J E C T E D							
<b>CAPITAL NEEDS</b>												
<u>Flight Equipment Payments</u>												
- Advance Deposits	32	-	42	95	94	100	100	129	90	80	730	
- Delivery	74	-	-	36	93	93	124	135	201	163	845	
- Spares, Modif. etc.	30	20	18	19	23	17	26	26	29	27	205	
Total Flt Equip Payments	136	20	60	150	210	210	250	290	320	270	1780	
Add: Flt Equip Leases	-	-	-	-	70	70	90	100	150	120	600	
Total Flight Equipment	136	20	60	150	280	280	340	390	470	390	2380	
<u>Ground Prop &amp; Eq/Other</u>												
Grd Prop & Equip	12	30	30	30	30	40	40	40	40	50	330	
Debt Retirement	63	89+30	58	63	64	128	127	48	48	45	700	
Dividends	-	-	8	2	2	10	12	22	22	22	100	
Other	6	11	4	5	4	2	1	-	-	3	30	
Total GPE & Other	81	160	100	100	100	180	180	110	110	120	1160	
End Wkg Cap (3wks COE proj)	116	130	120	140	150	170	190	210	230	250	250	
<b>TOTAL CAPITAL NEEDS</b>	<b>333</b>	<b>310</b>	<b>280</b>	<b>390</b>	<b>530</b>	<b>630</b>	<b>710</b>	<b>710</b>	<b>810</b>	<b>760</b>	<b>3790</b>	
<b>CAPITAL SOURCES</b>												
<u>Beginning Working Capital Operations</u>	20	116	130	120	140	150	170	190	210	230	120	
- Net Earnings (Rept'd)	(86)	10	20	50	80	110	140	150	150	160	870	
- Depreciation/Amort	111	110	111	111	111	109	112	120	137	152	1070	
- Property Sale/Other	140	20	19	15	9	11	8	-	3	16	100	
- Other	32	4	-	4	10	-	-	-	10	2	30	
Total Operations	197	144	150	180	210	230	260	270	300	330	2070	
<u>Financing Arrangements</u>												
- Senior Debt-Banks	79	-	-	-	80	80	100	60	-	40	360	
- " " -InscO/Others	20	-	-	40	10	20	30	30	100	-	230	
- Subord Debt	12	-	-	-	-	60	30	30	-	-	120	
- Leases (Cap @ AC Cost)	-	-	-	-	70	70	90	100	150	120	600	
- Deposits returnable	-	-	-	-	20	20	30	30	50	40	190	
- Stock Sales	5	50	-	50	-	-	-	-	-	-	100	
Tot Financing Arrangements	116	50	-	90	180	250	280	250	300	200	1600	
<b>TOTAL CAPITAL SOURCES</b>	<b>333</b>	<b>310</b>	<b>280</b>	<b>390</b>	<b>530</b>	<b>630</b>	<b>710</b>	<b>710</b>	<b>810</b>	<b>760</b>	<b>3790</b>	
<b>FINANCING TO BE ARRANGED</b>	<b>-</b>	<b>50</b>	<b>-</b>	<b>90</b>	<b>180</b>	<b>250</b>	<b>280</b>	<b>250</b>	<b>300</b>	<b>200</b>	<b>1600</b>	

AERO AD: CAPITAL NEEDS & SOURCES 1976-1984

TRANS WORLD

"MONEYABILITY"

Being in serious violation of its senior debt ratios at the end of 1975, TWA last fall began negotiations with its senior lenders to establish a debt deferral program. However, in April of this year, TWA discontinued the discussions claiming that its improved cash position made the program unnecessary. Assuming the earnings outlook continues to improve, (see Earnings schedule) and TWA is able to sell equity in both 1976 and 1978, the crucial Sr. Debt/Equity ratio will be comfortably below 150% by the end of 1978.

Because of the sale of its nine owned 747s last year, TWA's ratio of leased flight equipment to total flight equipment went considerably above its 33% limit. As a result, TWA will not be able to lease any aircraft until 1979.

With the operating ratio falling to 94% the airline's ROI peaks at 10.5% in 1981 (which is below the CAB's 12% standard). This operating improvement does permit the carrier to qualify for insurance money under the New York State Insurance Law by 1982.

TWA's steadily rising cash generation ratio reaches the five mills level by 1980. Obviously, the greater the internal cash flow, the less outside financing the carrier will require. Over the nine years in the study period, TWA's invested capital base will increase more than \$1 billion, but total debt will only account for \$186 million with leases being 94% of that figure.

It seems that TWA has flown through the worst of its financial storm. It is, of course, very fortunate that traffic has been so strong this year, that United Airlines had a strike last December, and that it had enough capacity on hand to be able to sell the two L-1011s and defer delivery of the 727-200s. TWA was on the brink of bankruptcy this past winter, but the combination of the above listed events together with an improved earnings outlook should make the carrier a viable borrowing entity by the early 1980's when its major fleet revamping must begin.

MONEYABILITY - INVESTED CAPITAL  
(System - All Services)

		1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976- 1984
	UNIT	Actual	P R O J E C T E D									
<b>INVESTED CAPITAL</b>												
<b>Debt</b>	\$ Mil											
Senior Debt - Banks	"	264	260	250	232	284	272	280	330	320	360	96
Senior Debt-Insco/Other	"	403	329	291	304	278	263	258	255	322	290	(113)
Senior Debt-Leases Cap'd	"	485	449	413	377	407	432	474	518	606	660	175
Senior Total - Reptd	"	667	589	541	536	562	535	538	585	642	659	(17)
Senior Total + Cap Lses	"	1152	1038	954	913	969	967	1012	1103	1248	1310	158
Subordinated	"	331	291	281	263	263	323	352	377	372	359	28
Total Debt - Reptd	"	998	880	822	799	825	858	890	962	1014	1009	11
Total Debt + Cap Lses	"	1483	1329	1235	1176	1232	1290	1364	1480	1620	1669	186
<b>Equity</b>												
Stock	"	339	399	411	509	587	687	815	943	1071	1209	870
Stock + Sub Debt	"	670	690	692	772	850	1010	1167	1320	1443	1568	898
Tot Inv Capital-Reptd	"	1337	1279	1233	1308	1412	1545	1705	1905	2085	2218	881
Tot Inv Capital + Cap Lses	"	1822	1728	1646	1685	1819	1977	2179	2423	2691	2878	1056
<b>FLIGHT EQUIPMENT</b>												
Depr Cost	"	836	775	714	674	746	822	950	1091	1333	1495	659
Depr Cost + Mfr Deposit	"	860	779	760	799	896	1002	1137	1306	1487	1607	747
Depr Cost + " + Cap Lses	"	1345	1228	1173	1176	1303	1434	1611	1824	2093	2267	922
<b>WORKING CAPITAL</b>												
Incl Cur Debt/Equiv Wks COE	\$Mill/Wks	116 / 3	130 / 4	120 / 3	140 / 3	150 / 3	170 / 3	190 / 3	210 / 3	230 / 3	250 / 3	134 / -
<b>RATIO ANALYSIS<sup>1/</sup> (G) UNIT/NORM</b>												
Sr Debt ÷												
Equity (Stk + Sub)	%-150%	172	150	138	118	114	96	87	84	86	84	(88)pts.
Sr Debt ÷												
Fl Eq (Net + Dep + Lse)	%- 80%	86	85	81	78	74	67	63	60	60	58	(28)pts.
Cap Lses Share Flt Eq	%- 33%	36	37	35	32	31	30	29	28	29	29	(7)pts.
Total Debt ÷												
Stock Equity	%-175%	437	333	300	231	210	188	167	157	151	138	(299)pts.
<b>N Y State Ins Law</b>												
Fix Chg Cov - 12 Mos	x-1.5	0.2	0.8	1.0	1.2	1.4	1.6	1.7	1.7	1.7	1.7	1.5x
Fix Chg Cov - 5 yr Avg	x-1.5	0.8	0.8	0.7	0.7	0.9	1.2	1.4	1.5	1.6	1.7	0.9x
Oper Ratio (Airline)	%	105	99	98	97	95	94	94	94	94	94	(11)pts.
Return On Inv (Corp)	%	(0.7)	5.0	5.6	7.2	8.6	9.7	10.5	10.3	9.6	9.5	10.2pts.
Rev ÷ Tot Inv Cap	\$	0.99	1.18	1.40	1.54	1.59	1.63	1.64	1.63	1.62	1.66	0.67
Net Cap Comts <sup>2/</sup>	\$ Mil	252	270	490	630	700	810	940	950	880	800	-
Fin Argd / % Argd	"/%	118 / 47	64 / 25	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
<b>Cash Generation</b>												
Flow per \$ Equity	¢/% Chg-30	1 / (86)	11 / 1000	15 / 36	18 / 20	20 / 11	19 / (5)	19 / -	18 / (5)	18 / -	18 / -	18 / 1700
Rev Less COE	Mills/% Chg-5.00											
per ASM		0.71 / (66)	2.91 / 310	3.45 / 19	4.14 / 20	4.75 / 15	5.43 / 14	5.86 / 8	5.88 / -	5.97 / 2	6.05 / 1	5.34 / 752

Note: (G) See Glossary.

- 1/ 12 months basis. % Changes are from end of prior year.  
2/ Net Cap Comts = Next two years projected capital expenditures for flight equipment and GPE.

MONEYABILITY-  
AERO AD: INV. CAPITAL 1976-1984

TRANS WORLD

P A R A M E T E R S

- U.S. TRUNKS & PAA -

- U N I T E D -

**ECONOMY USA** Strong growth into 1977. Thereafter resumption of secular GNP real growth at 3-4% rate. Inflation rate to be about 5% per year in 1976 and 1977. Thereafter inflation to drop to 3½-4% per year. Unemployment rate to continue slow drop; consumer income and confidence to continue to advance.

Ditto

**World** Turnaround from recession levels slower than U.S. with inflation rates to continue above USA's.

Ditto

		<u>1975-1980</u>	<u>1980-1984</u>
		Growth Rate	Compounded "GRC"
<b>TRAFFIC</b>	Dom RPMs (All Services)	7.5%	6.1%
	Int'l RPMs ( " " )	9.3%	7.4%
<b>CAPACITY</b>	ASMs ad hoc by carrier, but to generally increase at a lower rate than RPMs. 1976-1977 and part of 1978's increase mostly due to seating changes and maximum utilization.		
<b>LOAD FACTOR</b>	Ad hoc by carrier; generally increasing between 3 and 4 percentage points.		

		<u>1975-1980</u>	<u>1980-1984</u>
		Growth Rate	Compounded "GRC"
	Dom RPMs (All Services)	8.5%	6.1%
	Int'l RPMs ( " " )	-0-	-0-
	System ASMs (All Services)	7.0%	6.1%
<b>LOAD FACTOR</b>	System (All Services) to increase from 57.9% in 1975 to 62.5% by 1984.		

		<u>1976-1984</u>
		"GRC"
<b>COST</b>	Labor (System) (Avg Compens/Empl)	7.7%
<b>INCREMENT</b>	Fuel ( " ) (¢/gal)	5.3%
<b>RATE</b>	Other ( " ) (Industrial Prices)	4.2%
<b>YIELDS</b>	Carriers' need to stay at least even with general inflationary trends, necessitates annual yield increases between 3-5% minimum.	

		<u>1976-1984</u>
		"GRC"
	Labor (System) (Avg Compens/Empl)	7.6%
	Fuel ( " ) (¢/gal)	6.2%
	Other ( " ) (Industrial Prices)	3.4%
	Yields - Dom (¢/RPM)	4.0%
	" - Int'l ( " )	-0-

**EQUIPMENT** Buys to concentrate on presently available aircraft through 1980. By 1981-1982 new technology aircraft parametered in are:  
 180 seat medium range type  
 200 seat long range type  
 to help with pressing need for fuel economies and to meet the environmental imperative of the late 1970's and early 1980's.

To maintain seat mile range distribution and to allow down-ranging of older type equipment, new buys concentrate on 727-200s, DC-10s, 747s and 180 seat medium range type aircraft. By 1984, 219 aircraft still in fleet do not meet FAR part 36 requirements.

**MONEYABILITY** Cost of Capital - Ad hoc by carrier. Prime lending rate at 8-8.5% with carriers paying between ¼ to 1% above prime.  
Availability of Capital - very restricted until deregulation debate is settled. Funds to come from banks, manufacturers and through leasing. Loans from insurance companies restricted to a very few carriers, due to constrained cash generation and earnings outlook.

Ditto

Strong improvement in earnings and cash generation, plus excessive working capital on hand, allows UAL to finance most needs internally. Reliance on small bank revolver plus leasing of aircraft cover remaining needs. Other financing options open: equity market and insco money from 1980 on.

**CAB** Proposals under Aviation Act of 1975 not parametered into study. AERO ADVANCED will be re-done, when and if the various proposals have been enacted and a time frame is established.

Ditto

AERO AD: PARAMETERS 1976-1984

U N I T E D

## "Earnings"

United has made an excellent recovery from a 16 day strike last December and its aftermath which continued into the first quarter of this year. After posting a \$70.5 million operating loss in the first quarter, we believe that United will end 1976 with a \$38 million operating profit. The main reasons for this turn-around are strong RPM growth (United benefited from the on-again, off-again strike threats against TWA), very strong charter growth, and vastly improving yields thanks to fare increases and major reductions in discount fares. UAL's unit costs are expected to rise 11% this year with fuel up 18% as a result of its contracts having expired at the end of 1975. "Nettings" are reduced from their 1975 level because of much lower interest income.

The outlook for a healthy 1977 is promising as RPM growth will continue to be above the 1976-1984 average and costs look to be under control. The all important operating ratio should fall two points and the carrier's ROI will be more than double its 1975 figure.

Over the 9 year period under examination United's earnings prospects are good, but not spectacular. Net earnings as a percentage of revenues is 3.5% and the operating ratio is 94%. However, back in 1967 United earned 6.6% on sales and had an operating ratio of 90%. With earnings increasing sharply over the next five years, and the investment base actually declining, UAL's return on investment shoots up from 3.3% last year to its peak of 10.9% in 1980 and 1981. It should be kept in mind that even though the carrier does not earn the CABs 12% ROI standard during the period, United should have no trouble financing its equipment needs.

(See other 3 schedules.)

Notes: The \$11 million jump in 1976's depreciation expense is caused by the carry-over of 7 DC-10s delivered last year and large ground property and equipment additions this year. Gross interest expense falls throughout the study as UAL does not need to borrow any money until 1982. "Nettings" which accounted for 60% of reported earnings during the last four years will only be 24% of the \$1.3 billion in projected earnings over the 1976-1984 period.

E A R N I N G S  
- calendar years -

	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1985	
		Actual	P R O J E C T E D										
<b>Revenues</b>													
Passenger	\$Mil	1899	2297	2586	2883	3205	3556	3922	4314	4736	5182	32,681	
Freight		143	161	179	200	223	245	270	296	325	356	2,255	
<b>Total Revenues</b>	"	<u>2230</u>	<u>2629</u>	<u>2957</u>	<u>3297</u>	<u>3666</u>	<u>4064</u>	<u>4484</u>	<u>4931</u>	<u>5412</u>	<u>5923</u>	<u>37,363</u>	
<b>Cash Oper Exp</b>													
Labor	"	997	1163	1300	1440	1584	1762	1963	2185	2417	2677	16,451	
Fuel	"	374	482	542	592	645	698	751	816	891	968	6,385	
Other	"	685	756	845	926	1022	1124	1242	1367	1500	1646	10,428	
<b>Total COE</b>	"	<u>2056</u>	<u>2401</u>	<u>2687</u>	<u>2958</u>	<u>3251</u>	<u>3584</u>	<u>3956</u>	<u>4368</u>	<u>4808</u>	<u>5291</u>	<u>33,304</u>	
Depr/Amort	"	179	190	194	199	206	216	226	229	236	259	1,955	
<b>Total Oper Exp</b>	"	<u>2235</u>	<u>2591</u>	<u>2881</u>	<u>3157</u>	<u>3457</u>	<u>3800</u>	<u>4182</u>	<u>4597</u>	<u>5044</u>	<u>5550</u>	<u>35,259</u>	
Oper. Earnings	"	(5)	38	76	140	209	264	302	334	368	373	2,104	
Gross Interest	"	47	45	42	39	36	33	30	32	32	31	320	
Pre-Tax Earnings	"	(52)	(7)	34	101	173	231	272	302	336	342	1,784	
Inc. Tax	\$Mil	(1)	(3)	15	45	78	104	122	136	151	154	802	
Eff. Rate	%	cr	cr	45%	45%	45%	45%	45%	45%	45%	45%	45%	
<b>Net Earnings</b>													
Airline Operations	\$Mil	(51)	(4)	19	56	95	127	150	166	185	188	982	
"Nettings"	"	46	32	41	34	35	33	30	34	35	42	316	
<b>Reptd to Stockholders</b>	"	<u>(5)</u>	<u>28</u>	<u>60</u>	<u>90</u>	<u>130</u>	<u>160</u>	<u>180</u>	<u>200</u>	<u>220</u>	<u>230</u>	<u>1,298</u>	
<b>RATIOS</b>													
<b>Traffic (All Services)</b>													
RPMs - DOM	Bil/%Chg	" / "	28.2 / (4)	32.3 / 14	34.8 / 8	37.2 / 7	39.8 / 7	42.5 / 7	45.1 / 6	48.0 / 6	50.9 / 6	53.9 / 6	25.7 / 7.5 GRC
RPMs - System	" / "	" / "	28.2 / (4)	32.3 / 14	34.8 / 8	37.2 / 7	39.8 / 7	42.5 / 7	45.1 / 6	48.0 / 6	50.9 / 6	53.9 / 6	25.7 / 7.5 GRC
ASMs - System	" / "	" / "	48.7 / (1)	54.0 / 11	57.5 / 6	60.6 / 6	64.3 / 6	68.1 / 6	72.2 / 6	76.8 / 6	81.5 / 6	86.2 / 6	37.5 / 6.6 GRC
Load Factor - System	%		57.9	59.8	60.5	61.3	61.8	62.3	62.5	62.5	62.5	62.5	4.6
Yield - Dom	¢RPM/%Chg	" / "	6.74 / 1	7.11 / 6	7.44 / 5	7.76 / 5	8.06 / 4	8.37 / 4	8.69 / 4	8.99 / 3	9.30 / 4	9.62 / 3	2.88 / 4.0 GRC
Yield - System	" / "	" / "	6.74 / 1	7.11 / 6	7.44 / 5	7.76 / 5	8.06 / 4	8.37 / 4	8.69 / 4	8.99 / 3	9.30 / 4	9.62 / 3	2.88 / 4.0 GRC
<b>COST INCREMENT (COE)</b>													
- Labor (Non-Add)	\$Mil / %	68 / 8	104 / 10	106 / 9	109 / 8	102 / 7	116 / 7	128 / 7	144 / 7	156 / 7	174 / 7	1,139	
- Fuel	" / "	73 / 25	75 / 18	35 / 7	34 / 6	29 / 5	29 / 4	28 / 4	33 / 4	35 / 4	35 / 4	333	
- Other	" / "	86 / 15	(5) / (1)	40 / 5	35 / 4	38 / 4	41 / 4	51 / 4	46 / 4	49 / 3	60 / 4	355	
- Total	" / "	<u>227 / 13</u>	<u>174 / 11</u>	<u>181 / 8</u>	<u>178 / 7</u>	<u>169 / 5</u>	<u>186 / 6</u>	<u>207 / 5</u>	<u>223 / 6</u>	<u>240 / 5</u>	<u>269 / 6</u>	<u>1,827</u>	
<b>Weighted Index (1967=100)</b>	No / %Chg	194 / 13	215 / 11	232 / 8	247 / 7	261 / 5	276 / 6	291 / 5	307 / 6	324 / 5	343 / 6	149 / 6.5 GRC	

AERO AD: EARNINGS 1976-1984

U N I T E D

## "Flight Equipment"

Possessing the largest as well as the oldest fleet in the industry, United is facing a massive \$2.8 billion need for new aircraft by 1984. By increasing seating and utilization on existing aircraft, UAL will not have to start this major buying program until 1979. However, to meet specific needs UAL has recently purchased 6 DC 8-50s whose leases had expired, and has a tentative agreement to purchase 2 used DC 8-61s for 1977 and 1978 delivery. SH&E believes that UAL will reach a satisfactory agreement with the lessors of the 23 727-100s which expire in 1978 and that these planes will be bought by the carrier. Also there is a possibility that some of the 727-200s that have been bought for 1979 delivery will come into the fleet a year earlier.

New buys are predicated on keeping UAL's ASM/range at approximately 2/3 long-range and 1/3 short-to-medium. Until the air freight case now before the CAB is decided United has no plans to sell any of its DC-8 freighters or to purchase a 747F. However, we would not be surprised if UAL placed an order for a wide-bodied cargo plane in the next few years.

United, along with all other carriers, is anxiously awaiting the DOTs ruling on retrofit and other environmental issues. In 1976 only 39% of UAL's ASMs will be flown by environmentally acceptable aircraft. Even with the \$2.8 billion in new aircraft UAL will still be flying 218 planes in 1984 which do not meet FAR part 36 regulations. To replace these aircraft, which are generating about 27 billion ASMs, would require another \$2.5 billion in capital expenditures. Obviously, if the carrier is forced to replace these additional aircraft, the other 3 schedules in this report would have to be drastically altered and United's outlook would become dimmer.

FLIGHT EQUIPMENT - PURCHASE / REMOVALS / PAYMENTS / LEASES  
GROUND PROPERTY & EQUIPMENT (projected costs)

PURCHASES/LEASES (L)	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-
	Actual	- P R O J E C T E D -										1984
<b>Additions</b>	No. A/C											
727-200		-	-	-	-	15	12	-	-	-	-	27
DC-10-10		7	-	-	-	3	6	6	2	-	6	23
747		-	-	-	-	-	2	3	3	2	-	10
180 Seat M/R		-	-	-	-	-	-	7	15	15	10	47
<b>Total Additions</b>		<u>7</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>18</u>	<u>20</u>	<u>16</u>	<u>20</u>	<u>17</u>	<u>16</u>	<u>107</u>
<b>Total Cost A/C Type<sup>1/</sup></b>	\$ Mill											
727-200		-	-	-	-	172	144	-	-	-	-	316
DC-10-10		150	-	-	-	84	176	186	65	-	214	725
747		-	-	-	-	-	94	147	155	108	-	504
180 Seat M/R		-	-	-	-	-	-	185	397	418	293	1,293
<b>Total Cost Aircraft</b>		<u>150</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>256</u>	<u>414</u>	<u>185</u>	<u>617</u>	<u>526</u>	<u>507</u>	<u>2,838</u>
<b>Removals</b>	No A/C											
737		2	2	-	-	-	-	-	-	-	-	2
DC-8-20		-	-	-	10	9	10	-	-	-	-	29
DC-8-50		-	-	-	-	-	-	-	5	5	6	16
727-10Cs		-	-	-	-	-	-	15L	15L	-	-	30
<b>Total Removals</b>		<u>2</u>	<u>2</u>	<u>-</u>	<u>10</u>	<u>9</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>5</u>	<u>6</u>	<u>77</u>
<b>P A Y M E N T S 4/</b>												
<b>Flight Eq Payments</b>	\$ Mill											
Advance Deposits	"	-	-	32	114	170	184	147	108	85	95	930
Delivery	"	110	7	4	24	102	165	207	247	210	203	1,170
Spares, Modifs etc	"	40	33	34	22	28	31	36	35	45	42	310
<b>Total Flt Eq Payments</b>		<u>150</u>	<u>40</u>	<u>70</u>	<u>160</u>	<u>300</u>	<u>380</u>	<u>390</u>	<u>390</u>	<u>340</u>	<u>340</u>	<u>2,410</u>
<b>Total Flt Eq Leases<sup>2/</sup></b>	"	-	-	-	-	80	120	160	190	160	150	860
<b>Total Flight Equipment</b>	"	<u>150</u>	<u>40</u>	<u>70</u>	<u>160</u>	<u>380</u>	<u>500</u>	<u>550</u>	<u>580</u>	<u>500</u>	<u>490</u>	<u>3,270</u>
<b>GRD, PROP, &amp; EQUIP<sup>3/</sup></b>	"	<u>34</u>	<u>60</u>	<u>70</u>	<u>50</u>	<u>50</u>	<u>50</u>	<u>60</u>	<u>60</u>	<u>70</u>	<u>70</u>	<u>540</u>

NOTES: (L-Leased, all others 70% purchased)

1/ Cost per Aircraft Type - number x cost per aircraft incl base price + CFE/MC/spares. SH&E derived.

2/ Leases - @ 30% of total aircraft cost per year (1979-1984).

3/ Grd. Prop & Equip. - Subject to management reprogramming.

4/ Payments - (SH&E derived; reflect escalation)

Advance Deposits - pre-delivery @ 30% of unit price.

Delivery - balance remaining @ aircraft acceptance

Spares, Modifs, etc - @ 10% of aircraft cost (or derived)

AERO AD: FLT. EQUIP/GPE 1976-1984

U N I T E D

## "Capital Needs and Sources"

United's strong cash flow permits the carrier to fund over 70% of its capital expenditures with internally generated cash. The remaining needs are filled by leasing 30% of UAL's incoming fleet and by a minimal \$110 million in borrowings. United could, of course, decide to reduce its lease financing, and with its D/E ratios and earnings in good shape (see other schedules) UAL would have no problem borrowing from the manufacturers, banks, or insurance companies; it will qualify under the N.Y. State Insurance Law by 1980; or selling debt or equity to the public.

GPE expenditures are considerably higher than in 1975 as United is doing some major work at its San Francisco terminal and is installing a new computer system at its maintenance center. Major debt retirements start in 1976 but it is a well managed debt payment schedule which should prove to be no problem to United. Working capital remains at very high levels during the next few years so that when UAL starts its fleet buying in 1979 it will be able to eat into working capital without violating the 3 week norm.

SH&E has projected capital expenditures of \$3.8 billion for United over the 1976-1984 period. If these outlays are discounted back to the present at a 5% rate, the present value of these expenses are approximately \$3 billion. To put this number in perspective during the same 9 year span 1966-1975 United spent about \$2.8 billion for new flight equipment, including leased aircraft, and GPE.

Based on SH&E's parameters UAL will have no problem financing its capital needs. If the carrier is forced to replace its first generation jet aircraft at a faster rate than we had projected, the numerous capital resources available to UAL's management would probably see the carrier through, though obviously the schedules in this report would not look as good.

### Recap 1976-1985

Needs: \$4.92 billion (66% flight equipment, 11% GPE, 10% debt retirement, and 5% dividends.)

Sources: \$3.37 billion or 69% from operations (26% earnings, 40% depreciation)  
\$1.24 billion or 25% new financing.

CAPITAL NEEDS AND SOURCES (\$ MILL)

- calendar years -

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976- 1984	
CAPITAL NEEDS	ACTUAL				P R O J E C T E D							
<u>Flight Equipment Payments</u>												
- Advance Deposits		-	32	114	170	184	147	108	85	95	930	
- Delivery	110	7	4	24	102	165	207	247	210	203	1,170	
- Spares, Modif. etc.	40	33	34	22	28	31	36	35	45	42	310	
Total Flt Equip Payments	150	40	70	160	300	380	390	390	340	340	2,410	
Add: Flt Equip Leases	-	-	-	-	80	120	160	190	160	160	860	
Total Flight Equipment	150	40	70	160	380	500	550	580	500	490	3,270	
<u>Ground Prop &amp; Eq/Other</u>												
Grd Prop & Equip	34	60	70	50	50	50	60	60	70	70	540	
Debt Retirement	20	43	55	53	53	53	69	61	61	61	510	
Dividends	15	15	15	20	25	25	35	35	40	45	250	
Other	-	2	-	7	2	2	6	4	9	4	40	
Total GPE & Other	69	120	140	130	130	130	170	160	180	180	2,340	
End Wkg Cap (3wks COE proj)	311	380	440	450	390	310	220	250	280	310	310	
TOTAL CAPITAL NEEDS	530	540	650	740	900	940	940	990	960	980	4,920	
<u>CAPITAL SOURCES</u>												
Beginning Working Capital Operations	341	311	380	440	450	390	310	220	250	280	310	
- Net Earnings (Rept'd)	(5)	28	60	90	130	160	180	200	220	230	1,300	
- Depreciation/Amort	179	190	194	199	206	216	226	229	236	259	1,950	
- Property Sale/Other	13	18	16	11	10	9	10	11	12	11	110	
- Other	2	(7)	-	-	4	5	4	-	2	-	10	
Total Operations	189	229	270	300	350	390	420	440	470	500	3,370	
<u>Financing Arrangements</u>												
- Senior Debt-Banks	-	-	-	-	-	-	-	80	30	-	110	
- " " -InSCO/Others	-	-	-	-	-	-	-	-	-	-	-	
- Subord Debt	-	-	-	-	-	-	-	-	-	-	-	
- Leases (Cap @ AC Cost)	-	-	-	-	80	120	160	190	160	150	860	
- Deposits returnable	-	-	-	-	20	40	50	60	50	50	270	
- Stock Sales	-	-	-	-	-	-	-	-	-	-	-	
Tot Financing Arrangements	-	-	-	-	100	160	210	330	240	200	1,240	
TOTAL CAPITAL SOURCES	530	540	650	740	900	940	940	990	960	980	4,920	
FINANCING TO BE ARRANGED	-	-	-	-	100	160	210	330	240	200	1,240	

AERO AD: CAPITAL NEEDS & SOURCES 1976-1984

U N I T E D

## C O M M E N T A R Y

### "Moneyability"

UAL is currently in a strong financial position and with capital expenditures at a rather modest level during the next three years the carrier will be in excellent shape to meet its huge fleet buying requirements starting in 1979. Its cash generation ratio fell precipitously in 1975, but with earnings improving, this vital indicator is pointing upwards and by 1978 UAL will be comfortably above the 5 mills norm. As a result of this strong internal ability to finance itself, together with its superior working capital position (in 1977 and 1978 over \$400 million in W.C. which is more than 8 weeks of cash operating expenses) and its willingness to lease 30% of its incoming aircraft, UAL will only have to borrow \$110 million over the next 9 years. Consequently, its D/E ratios fall dramatically.

If United decides not to lease the 30% of incoming flight equipment parametered into the study, its treasurer will have a host of other financing options. With the senior debt/equity ratio in good shape UAL could borrow considerably more from the banks, and starting in 1980 it qualifies under the N.Y. State Insurance Law. Possessing a strong earnings outlook, UAL might even decide to go to the public market for a debt or equity offering.

UAL's good, but not great, earnings outlook means that the crucial operating ratio will drop from the uncomfortably high levels of 1975 and 1976 and the carriers ROI will improve tremendously, even though it never reaches 12%.

A \$37 million elimination of a self-insurance reserve is a major reason why 1976's depreciated cost of flight equipment falls \$156 million from its 1975 level. Revenues as a percent of Invested Capital jumps 23% this year because of last year's strike; the strong RPM and yield increases this year, and a reduction in the carrier's investment base.

One caveat to this basically healthy outlook is the possibility that UAL might have to speed up its fleet revamping for environmental reasons (see Flt Equipment schedule). If the carrier is forced to invest additional hundreds of millions or even billions in new flight equipment, its financial resources would come under tremendous strain. However, its ability to build up and strengthen its balance sheet over the next few years would probably still give it enough financing options to see it through.

CAPITAL NEEDS AND SOURCES (\$ MILL)  
- calendar years -

CAPITAL NEEDS	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-	
	ACTUAL	P R O J E C T E D										1984
<b>Flight Equipment Payments</b>												
- Advance Deposits		-	32	114	170	184	147	108	85	95		930
- Delivery	110	7	4	24	102	165	207	247	210	203		1,170
- Spares, Modif. etc.	40	33	34	22	28	31	36	35	45	42		310
Total Flt Equip Payments	150	40	70	160	300	380	390	390	340	340		2,410
Add: Flt Equip Leases	-	-	-	-	80	120	160	190	160	150		860
Total Flight Equipment	150	40	70	160	380	500	550	580	500	490		3,270
<b>Ground Prop &amp; Eq/Other</b>												
Grd Prop & Equip	34	60	70	50	50	50	60	60	70	70		540
Debt Retirement	20	43	55	53	53	53	69	61	61	61		510
Dividends	15	15	15	20	25	25	35	35	40	45		250
Other	-	2	-	7	2	2	6	4	9	4		40
Total GPE & Other	69	120	140	130	130	130	170	160	180	180		1,340
End Wkg Cap (3wks COE proj)	311	380	440	450	390	310	220	250	280	310		310
<b>TOTAL CAPITAL NEEDS</b>	<b>530</b>	<b>540</b>	<b>650</b>	<b>740</b>	<b>900</b>	<b>940</b>	<b>940</b>	<b>990</b>	<b>960</b>	<b>980</b>		<b>4,320</b>
<b>CAPITAL SOURCES</b>												
Beginning Working Capital	341	311	380	440	450	390	310	220	250	280		310
<b>Operations</b>												
- Net Earnings (Rept'd)	(5)	28	60	90	130	160	180	200	220	230		1,300
- Depreciation/Amort	179	190	194	199	206	216	226	229	236	259		1,950
- Property Sale/Other	13	18	16	11	10	9	10	11	12	11		110
- Other	2	(7)	-	-	4	5	4	-	2	-		10
Total Operations	189	229	270	300	350	390	420	440	470	500		3,370
<b>Financing Arrangements</b>												
- Senior Debt-Banks	-	-	-	-	-	-	-	80	30	-		110
- " " -Insko/Others	-	-	-	-	-	-	-	-	-	-		-
- Subord Debt	-	-	-	-	-	-	-	-	-	-		-
- Leases (Cap @ AC Cost)	-	-	-	-	80	120	160	190	160	150		860
- Deposits returnable	-	-	-	-	20	40	50	60	50	50		270
- Stock Sales	-	-	-	-	-	-	-	-	-	-		-
Tot Financing Arrangements	-	-	-	-	100	160	210	330	240	200		1,240
<b>TOTAL CAPITAL SOURCES</b>	<b>530</b>	<b>540</b>	<b>650</b>	<b>740</b>	<b>900</b>	<b>940</b>	<b>940</b>	<b>990</b>	<b>960</b>	<b>980</b>		<b>4,920</b>
<b>FINANCING TO BE ARRANGED</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>100</b>	<b>160</b>	<b>210</b>	<b>330</b>	<b>240</b>	<b>200</b>		<b>1,240</b>

AERO AD: CAPITAL NEEDS & SOURCES 1976-1984

UNITED

MONEYABILITY - INVESTED CAPITAL  
(System - All Services)

	UNIT	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
<b>INVESTED CAPITAL</b>		Actual	P R O J E C T E D									
<b>Debt</b>	\$ Mil											
Senior Debt - Banks	"	-	-	-	-	-	-	-	80	110	110	110
Senior Debt-Insco/Other	"	637	593	543	502	460	418	360	310	261	211	(426)
Senior Debt-Leases Cap'd	"	473	425	377	333	365	436	536	653	733	805	332
Senior Total - Reptd	"	637	593	543	502	460	418	360	390	371	321	(316)
Senior Total + Cap Lses	"	1110	1018	920	835	825	854	896	1043	1104	1126	16
Subordinated	"	182	182	177	165	154	143	131	120	108	96	(86)
Total Debt - Reptd	"	819	775	720	667	614	561	491	510	479	417	(402)
Total Debt + Cap Lses	"	1292	1200	1097	1000	979	997	1027	1163	1212	1222	(70)
<b>Equity</b>												
Stock	"	628	641	686	756	861	996	1141	1306	1486	1671	1,043
Stock + Sub Debt	"	810	823	863	921	1015	1139	1272	1426	1594	1767	957
Tot Inv Capital-Reptd	"	1447	1416	1406	1423	1475	1557	1632	1816	1965	2088	641
Tot Inv Capital + Cap Lses	"	1920	1841	1783	1756	1840	1993	2168	2469	2698	2893	973
<b>FLIGHT EQUIPMENT</b>												
Depr Cost	"	1271	1115	1007	904	820	1038	1222	1473	1654	1800	529
Depr Cost + Mfr Deposit	"	1271	1115	1039	1050	1159	1337	1513	1686	1794	1883	612
Depr Cost + " + Cap Lses	"	1744	1540	1416	1383	1524	1773	2049	2339	2527	2688	944
<b>WORKING CAPITAL</b>												
Incl Cur Debt/Equip Wks COE	\$Mill/Wks	311 / 8	380 / 8	440 / 9	450 / 8	390 / 6	310 / 4	220 / 3	250 / 3	280 / 3	310 / 3	- / (5)
<b>RATIO ANALYSIS<sup>1/</sup></b> (G)	UNIT/NORM											
Sr Debt ÷ Equity (Stk + Sub)	%-150%	137	124	107	91	81	75	70	73	69	64	(73)pts.
Sr Debt ÷ Fl Eq (Net + Dep + Lse)	%- 80%	64	66	65	60	54	48	44	45	44	42	(22)pts.
Cap Lses Share Flt Eq	%- 33%	27	28	27	24	24	25	26	28	29	30	3 pts.
Total Debt ÷ Stock Equity	%-175%	206	187	160	132	114	100	90	89	82	73	(133)pts.
<b>N Y State Ins Law</b>												
Fix Chg Cov - 12 Mos	x-1.5	0.7	1.0	1.2	1.6	2.0	2.3	2.4	2.4	2.4	2.4	1.7 x
Fix Chg Cov - 5 yr Avg	x-1.5	1.2	1.2	1.2	1.2	1.3	1.6	1.9	2.1	2.3	2.4	1.2 x
Oper Ratio (Airline)	%	100	99	97	96	94	94	93	93	93	94	(6)pts.
Return On Inv (Corp)	%	3.3	5.2	7.0	8.5	10.2	10.9	10.9	10.6	10.6	10.3	7.0 pts.
Rev ÷ Tot Inv Cap	\$	1.16	1.43	1.66	1.88	1.99	2.04	2.07	2.00	2.01	2.05	0.89
Net Cap Comts <sup>2/</sup>	\$ Mil	83	350	640	980	1160	1250	1210	1130	1050	1000	-
Fin Argd / % Argd	%	-0-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
<b>Cash Generation</b>												
Flow per \$ Equity	¢/% Chg-30	16 / (45)	23 / 44	25 / 9	28 / 12	30 / 7	30 / -	30 / -	28 / (7)	26 / (7)	25 / (4)	9 / 56
Rev Less COE	Mills/% Chg-5.00											
per ASM		3.57 / (52)	4.22 / 18	4.70 / 11	5.59 / 19	6.45 / 15	7.05 / 9	7.31 / 4	7.33 / -	7.41 / 1	7.33 / (1)	3.76 / 105

Moneyability  
AERO: Inv. Capital 1976-1984

Note: (G) See Glossary.

- 1/ 12 months basis. % Changes are from end of prior year.  
2/ Net Cap Comts = Next 2 years projected capital expenditures for flight equipment and GPE.

UNITED

P A R A M E T E R S

----- U.S. TRUNKS & PAA -----		----- WESTERN -----																			
ECONOMY USA	Strong growth into 1977. Thereafter resumption of secular GNP real growth at 3-4% rate. Inflation rate to be about 5% per year in 1976 and 1977. Thereafter inflation to drop to 3-4% per year. Unemployment rate to continue slow drop; consumer income and confidence to continue to advance.	DITTO																			
World	Turnaround from recession levels slower than U.S. with inflation rates to continue above USA's.	DITTO																			
TRAFFIC	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;"></th> <th style="width: 15%; text-align: center;">1975-1980 Growth Rate Compounded "GRC"</th> <th style="width: 15%; text-align: center;">1980-1984 Growth Rate Compounded "GRC"</th> </tr> </thead> <tbody> <tr> <td>Dom RPMs (All Services)</td> <td style="text-align: center;">7.5%</td> <td style="text-align: center;">6.1%</td> </tr> <tr> <td>Int'l RPMs ( " " )</td> <td style="text-align: center;">9.3%</td> <td style="text-align: center;">7.4%</td> </tr> </tbody> </table>		1975-1980 Growth Rate Compounded "GRC"	1980-1984 Growth Rate Compounded "GRC"	Dom RPMs (All Services)	7.5%	6.1%	Int'l RPMs ( " " )	9.3%	7.4%	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;"></th> <th style="width: 15%; text-align: center;">1975-1980 Growth Rate Compounded "GRC"</th> <th style="width: 15%; text-align: center;">1980-1984 Growth Rate Compounded "GRC"</th> </tr> </thead> <tbody> <tr> <td>Dom RPMs (All Services)</td> <td style="text-align: center;">7.1%</td> <td style="text-align: center;">5.9%</td> </tr> <tr> <td>Int'l RPMs ( " " )</td> <td style="text-align: center;">8.8%</td> <td style="text-align: center;">6.9%</td> </tr> </tbody> </table>		1975-1980 Growth Rate Compounded "GRC"	1980-1984 Growth Rate Compounded "GRC"	Dom RPMs (All Services)	7.1%	5.9%	Int'l RPMs ( " " )	8.8%	6.9%	
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CAPACITY	ASMs ad hoc by carrier, but to generally increase at a lower rate than RPMs. 1976-1977 and part of 1978's increase mostly due to seating changes and maximum utilization.	System ASMs (All Services)	7.5%                      4.8%																		
LOAD FACTOR	Ad hoc by carrier; generally increasing between 3 and 4 percentage points.	LOAD FACTOR System (All Services)	to increase from 60.7% in 1975 to 62.5% by 1984.																		
COST INCREMENT RATE	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;"></th> <th style="width: 15%; text-align: center;">1976-1984 "GRC"</th> </tr> </thead> <tbody> <tr> <td>Labor (System) (Avg Compens/Empl)</td> <td style="text-align: center;">7.7%</td> </tr> <tr> <td>Fuel ( " ) (¢ gal)</td> <td style="text-align: center;">5.3%</td> </tr> <tr> <td>Other ( " ) (Industrial Prices)</td> <td style="text-align: center;">4.2%</td> </tr> </tbody> </table>		1976-1984 "GRC"	Labor (System) (Avg Compens/Empl)	7.7%	Fuel ( " ) (¢ gal)	5.3%	Other ( " ) (Industrial Prices)	4.2%	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;"></th> <th style="width: 15%; text-align: center;">1976-1984 "GRC"</th> </tr> </thead> <tbody> <tr> <td>Labor (System) (Avg Compens/Empl)</td> <td style="text-align: center;">7.7%</td> </tr> <tr> <td>Fuel ( " ) (¢ gal)</td> <td style="text-align: center;">5.1%</td> </tr> <tr> <td>Other ( " ) (Industrial Prices)</td> <td style="text-align: center;">3.6%</td> </tr> </tbody> </table>		1976-1984 "GRC"	Labor (System) (Avg Compens/Empl)	7.7%	Fuel ( " ) (¢ gal)	5.1%	Other ( " ) (Industrial Prices)	3.6%			
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YIELDS	Carriers' need to stay at least even with general inflationary trends, necessitates annual yield increases between 3-5% minimum.	Yields - Dom (¢/RPM)	4.1%																		
		" - Int'l ( " )	3.7%																		
EQUIPMENT	Buys to concentrate on presently available aircraft through 1980. By 1981-1982 new technology aircraft parametered in are: 180 seat medium range type 200 seat long range type to help with pressing need for fuel economies and to meet the environmental imperative of the late 1970's and early 1980's.	Buys concentrate on DC-10s, 727-200s and 180 seat M/R to allow for route expansion and SM/range distribution. Carrier is especially vulnerable to environmental noise/smog legislation at operating headquarters (LAX), so study phases out 720Bs, 707-320Cs and 737s.																			
MONEYABILITY	<u>Cost of Capital</u> - Ad hoc by carrier. Prime lending rate at 8-8.5% with carriers paying between ¼ and 1 percent above prime. <u>Availability of Capital</u> - very restricted until deregulation debate is settled. Funds to come from banks, manufacturers and through leasing. Loans from insurance companies - restricted to a very few carriers, due to constrained cash generation and earnings outlook.	DITTO	Improved earnings power gives management wide range of financing options. Requalification for insurance company financing in 1977 (after short term disqualification during 1976) provides live option alternative and/or supplement to, bank loans and aircraft leasing.																		
CAB	Proposals under Aviation Act of 1975 not parametered into study. AERO ADVANCED will be re-done, when and if the various proposals have been enacted and a time frame is established.	DITTO																			

## C O M M E N T A R Y

### "EARNINGS"

Western's 1976 reported earnings will be only fractionally higher than last year's figure, but operating income will have more than doubled. The major difference is in our "netting" figure which is \$5.9 million lower this year. Last year WAL made an accounting change in regard to its major flight equipment maintenance which contributed \$7.16 million to net income.

Western's 2nd half 1976 RPM's will be virtually flat as last year's period was distorted by strikes against competitors National, Northwest and United. However, yield increases will cause revenues to increase about 10% during the 2nd half and 14% for the full year. Cargo revenues will be up about 25% over 1975 as the freight business is very strong in both the domestic and international markets.

WAL's cash operating expenses were up 15% during the 1st half 1976 but the rate of increase should moderate to 12% for the full year. For the six months unit labor costs were 15% higher than last year, fuel 7% higher, and "other" were actually down 3%, which averaged out to 8%. For all of 1976 unit costs should increase about 7.3%.

1977 looks to be a good year for Western as above average RPM growth (mainly from carry-over on the newly inaugurated Honolulu-Vancouver and Los Angeles-Miami routes) plus higher yields should translate into a 50% increase in operating earnings. The new tax law just signed by President Ford will decrease the carrier's tax rate and the net result will be a healthy 54% increase in reported net income.

The longer term outlook for Western is good but not spectacular. Reported earnings for the 9 year period are 4.24% of revenues and the carrier does not earn the CAB's 12% ROI standard until 1981 (see Moneyability schedule). To put those numbers in perspective, it should be noted that in 1974 WAL returned 13.1% on its investment while earning 4.93% on every dollar of revenues.

With over a third of its 1975 RPM's being flown to Mexico and Hawaii, Western is potentially vulnerable to increased competition from ABC and OTC charters. Western is also faced with the prospect that a large part of its business (Alaska, Hawaii and Mexico) is not covered under the CAB's domestic rate-making cases, and it may have trouble getting adequate fare increases in these predominantly pleasure markets.

N.B. By undercharging its 6 mos. 1976 advertising expenses and by reducing pension costs, WAL contributed \$1.72 million to 6 mos. operating income, or 19% of total.

"EARNINGS"

EARNINGS

- calendar years -

	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976- 1984
		Actual	P R O J E C T E D									
<u>Revenues</u>												
Passenger	\$Mil	469	534	604	674	748	829	915	1004	1101	1204	7613
Freight	"	24	30	35	40	45	51	58	65	73	82	479
<b>Total Revenues</b>	"	<b>519</b>	<b>590</b>	<b>670</b>	<b>745</b>	<b>830</b>	<b>920</b>	<b>1010</b>	<b>1110</b>	<b>1220</b>	<b>1340</b>	<b>8435</b>
<u>Cash Oper Exp</u>												
Labor	"	202	225	251	280	308	339	377	422	468	521	3191
Fuel	"	93	103	119	133	147	157	167	180	194	209	1409
Other	"	180	204	230	256	281	307	333	364	396	429	2800
<b>Total COE</b>	"	<b>475</b>	<b>532</b>	<b>600</b>	<b>669</b>	<b>736</b>	<b>803</b>	<b>877</b>	<b>966</b>	<b>1058</b>	<b>1159</b>	<b>7400</b>
Depr/Amort	"	36	38	40	43	42	44	40	45	51	56	399
<b>Total Oper Exp</b>	"	<b>510</b>	<b>570</b>	<b>640</b>	<b>712</b>	<b>778</b>	<b>847</b>	<b>917</b>	<b>1011</b>	<b>1109</b>	<b>1215</b>	<b>7799</b>
<b>Oper. Earnings</b>	"	<b>8.6</b>	<b>20</b>	<b>30</b>	<b>33</b>	<b>52</b>	<b>73</b>	<b>93</b>	<b>99</b>	<b>111</b>	<b>125</b>	<b>636</b>
Gross Interest	"	9.0	9	11	13	15	18	19	21	22	23	151
Pre-Tax Earnings	"	(.4)	11	19	20	37	55	74	78	89	102	485
Inc. Tax	\$Mil	(.8)	4	3	2	9	19	28	31	36	41	173
Eff. Rate	%	cr	40%	16%	10%	25%	34%	38%	40%	40%	40%	36%
<u>Net Earnings</u>												
Airline Operations	\$Mil	.4	7	16	18	28	36	46	47	53	61	312
"Nettings"	"	11.9	6	4	7	2	4	4	3	7	9	46
<b>Reptd to Stockholders</b>	"	<b>12.3</b>	<b>13</b>	<b>20</b>	<b>25</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>50</b>	<b>60</b>	<b>70</b>	<b>358</b>
<u>RATIOS</u>												
<u>Traffic (All Services)</u>												
RPMs - DOM	Bil/%Chg	" / " 6.52 / 5	7.06/8	7.60/8	8.11/7	8.64/7	9.21/7	9.76/6	10.4/6	11.0/6	11.6/6	5.08/6.6 GRC
RPMs - System	" / " 7.10 / 5	7.68/8	8.29/8	8.86/7	9.45/7	10.1/7	10.7/6	11.4/6	12.0/6	12.7/6	12.7/6	5.60/6.7 GRC
ASMs - System	" / " 11.7 / 5	12.9/10	14.0/8	15.0/7	15.9/6	16.8/6	17.5/4	18.5/6	19.4/5	20.3/5	20.3/5	8.60/6.3 GRC
Load Factor - System	%	60.7	59.4	59.2	59.1	59.5	60.0	61.0	61.5	62.0	62.5	1.8pts.
Yield - Dom	¢RPM/%Chg	6.65 / 1	7.02/6	7.36/5	7.69/5	7.99/4	8.31/4	8.64/4	8.94/3	9.24/3	9.56/4	2.91/4.1 GRC
Yield - System	" / " 6.61 / 1	6.95/5	7.29/5	7.62/5	7.91/4	8.23/4	8.55/4	8.85/3	9.15/3	9.47/4	9.47/4	2.86/4.1 GRC
<u>COST INCREMENT (COE)</u>												
- Labor (Non-Add)	\$Mil/ %	26 / 15	22/11	19/9	21/8	20/7	22/7	25/7	28/7	31/7	34/7	222
- Fuel	" / " 19 / 25	6/7	10/9	8/6	7/5	6/4	6/4	7/4	7/4	7/4	8/4	65
- Other	" / " 16 / 10	5/3	9/4	10/4	11/4	11/4	13/4	12/3	14/3	14/3	15/4	100
- Total	" / " 61 / 16	33/7	38/7	39/6	38/6	39/5	44/6	47/5	52/6	52/6	57/6	387
<b>Weighted Index (1967=100)</b>	No / %Chg	205 / 16	220/7	236/7	251/6	265/6	280/5	296/6	312/5	330/6	350/6	145/6.1 GRC

AERO AD: EARNINGS 1976-1984

WESTERN

## C O M M E N T A R Y

### "FLIGHT EQUIPMENT"

Having been awarded two new long-haul routes (Honolulu-Vancouver, Los Angeles-Miami), and experiencing strong traffic growth (system RPM's were up 16% for the first 6 months), Western earlier this year exercised options for a DC-10 and 5 727-200s. We believe that by the beginning of next year Western will exercise its option for another 5 727-200s for 1978 delivery, and it is possible that they could order additional DC-10s before the 1979 order we have projected into the study. The current DC-10 fleet's daily utilization is over 12 hours which is the highest among the trunks flying that type of aircraft.

Of the 5 smaller trunks (Braniff, Continental, National, Northwest and Western) WAL is the only one who has not either simplified its fleet or is in the process of doing so. As Northwest has so well illustrated, there are great cost savings to a carrier which standardizes its flight equipment. As of now, WAL's management has given no sign that it will start disposing of its relatively inefficient 720Bs and 707s during the next few years.

Our study projects that by the end of 1984 Western will still be flying over 10% of its ASM's with aircraft that do not meet the environmental restrictions of FAR Part 36. To completely replace these planes (737s and older 727-200s) would cost about \$240 million in 1984 dollars. Being a Los Angeles based carrier, WAL must be particularly concerned about this subject, and there is the possibility that WAL might be forced to revamp its fleet much sooner than we have projected. Not having the strongest balance sheet in the industry, Western could be hard pressed to meet an immediate tightening of environmental restrictions, but should be able to manage it (see Moneyability schedule).

N.B. Western's load factor only increases 1.8 percentage points between 1975-1984. Because many passengers have been turned away at peak periods when load factors approach 60%, we have projected a slight decrease in WAL's L.F. over the next three years before letting it rise to our maximum 62.5% in 1984.

"FLIGHT EQUIPMENT"

FLIGHT EQUIPMENT - PURCHASE / REMOVALS / PAYMENTS / LEASES  
GROUND PROPERTY & EQUIPMENT (projected costs)

PURCHASES/LEASES (L)	Unit	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
	Actual	- P R O J E C T E D -										
<b>Additions</b>	No. A/C											
DC-10		1L	1*L	-	-	2	3	3	1	1	1	12
727-200		3	-	5*	5	-	-	-	-	-	-	10
180 Seat M/R		-	-	-	-	-	-	-	5	4	3	12
<b>Total Additions</b>		<u>4</u>	<u>1</u>	<u>5</u>	<u>5</u>	<u>2</u>	<u>3</u>	<u>3</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>34</u>
<b>Total Cost A/C Type<sup>1/</sup></b>	\$ Mill											
DC-10		23	27	-	-	56	88	93	32	34	36	366
727-200		25	-	52	55	-	-	-	-	-	-	107.
180 Seat M/R		-	-	-	-	-	-	-	139	111	88	338
<b>Total Cost Aircraft</b>		<u>48</u>	<u>27</u>	<u>52</u>	<u>55</u>	<u>56</u>	<u>88</u>	<u>83</u>	<u>171</u>	<u>145</u>	<u>124</u>	<u>811</u>
<b>Removals</b>	No A/C											
737		1	1	-	-	-	-	-	4	4	4	13
720B		-	-	-	-	6	6	6	-	-	-	18
707-320C		-	-	-	-	-	-	-	2	3	-	5
<b>Total Removals</b>		<u>1</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>7</u>	<u>4</u>	<u>36</u>
<b>P A Y M E N T S <sup>4/</sup></b>												
<b>Flight Eq Payments</b>	\$ Mill											
Advance Deposits	"	7	23	18	28	37	45	46	31	35	40	303
Delivery	"	22	-	37	38	39	35	37	68	58	50	362
Spares, Modifs etc	"	2	4	5	4	4	10	7	11	7	10	62
<b>Total Flt Eq Payments</b>	"	<u>31</u>	<u>27</u>	<u>60</u>	<u>70</u>	<u>80</u>	<u>90</u>	<u>90</u>	<u>110</u>	<u>100</u>	<u>100</u>	<u>727</u>
<b>Total Flt Eq Leases <sup>2/</sup></b>	"	<u>23</u>	<u>26</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>30</u>	<u>30</u>	<u>50</u>	<u>40</u>	<u>40</u>	<u>216</u>
<b>Total Flight Equipment</b>	"	<u>54</u>	<u>53</u>	<u>60</u>	<u>70</u>	<u>80</u>	<u>120</u>	<u>120</u>	<u>160</u>	<u>140</u>	<u>140</u>	<u>943</u>
<b>GRD, PROP, &amp; EQUIP <sup>3/</sup></b>	"	<u>11</u>	<u>7</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>20</u>	<u>20</u>	<u>20</u>	<u>30</u>	<u>30</u>	<u>157</u>

NOTES: (L-Leased, all others 70% purchased) M/R = Medium Range.

<sup>1/</sup> Cost per Aircraft Type - number x cost per aircraft incl base price + CFE/MC/spares. SH&E derived.

<sup>2/</sup> Leases - @ 30% of total aircraft cost per year (1980-1984).

<sup>3/</sup> Grd. Prop & Equip. - Subject to management reprogramming.

<sup>4/</sup> Payments - (SH&E derived; reflect escalation)

Advance Deposits - pre-delivery @ 30% of unit price.

Delivery - balance remaining @ aircraft acceptance

Spares, Modifs, etc - @ 10% of aircraft cost (or derived)

\* Firm Orders.

AERO AD: FLT. EQ/GPE 1976-1984

WESTERN

## C O M M E N T A R Y

### "CAPITAL NEEDS AND SOURCES"

Western should not have any problem supplying the \$1.5 billion in capital needs projected for the 1976-1984 period. Internal cash flow together with sales of property should account for about 55-60%, with the remainder coming from outside sources including leases.

On June 30th of this year WAL paid back the remaining amount of its old bank loan agreement and immediately entered into a new \$75 million revolving credit at slightly higher rates (as had been forecast in last year's Aero Advanced Study). \$18.75 million was drawn down right away, and we project the remaining \$56.25 million will be used by the end of 1978 when the credit turns into a term loan.

Back in April WAL repurchased 2.5MM of its common shares for \$7.3 million in cash and a \$23 million subordinated note. This transaction is the \$30 million shown under "other" in the 1976 column. The only other financing Western did this year was to lease its fourth DC-10 in June.

No planes are leased between 1977-1979 because the benefits in the recently passed tax bill make it advantageous for the carrier to buy its equipment. Starting in 1980, 30% of the value of incoming flight equipment is leased. Western qualifies under the NY State Insurance Law from 1980 on, and a good part of the new \$90 million in projected Sr. Debt (excluding bank) will come from this source.

Between 1967-1975 Western spent about \$620 million for flight equipment and GPE. Our projections show them spending \$1.1 billion between 1976-1984, but if these outlays are discounted at a 5% rate, the resulting present value is only \$870 million. In real terms WAL's capital spending will be up 40% which is one of the largest increases among the trunks.

N.B. We have discontinued WAL's 50% dividend policy after 1976 in order to conserve cash for the carrier's capital spending program. Western has a liberal depreciation policy for its flight equipment. For the first six months of 1976 it charged \$14.3 million to F.E. depreciation, while if it had used CAB depreciation standards, it would have had to charge another \$2.4 million.

#### Recap: 1976-1984

Needs: \$1.52 billion (62% flight equipment, 11% GPE, 14% debt retirement).

Sources: \$850 million or 56% from operations (24% earnings, 26% depreciation).  
\$650 million or 43% new financing (\$520 million, or 34% to be arranged).

"CAPITAL NEEDS AND SOURCES"

CAPITAL NEEDS AND SOURCES (\$ MILL)  
- calendar years -

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976- 1984
	ACTUAL	P R O J E C T E D									
<b>CAPITAL NEEDS</b>											
<u>Flight Equipment Payments</u>											
- Advance Deposits	7	23	18	28	37	45	46	31	35	40	300
- Delivery	22	-	37	38	39	35	37	68	58	50	360
- Spares, Modif. etc.	2	4	5	4	4	10	7	11	7	10	60
Total Flt Equip Payments	31	27	60	70	80	90	90	110	100	100	720
Add: Flt Equip Leases	23	26	-	-	-	30	30	50	40	40	220
Total Flight Equipment	54	53	60	70	80	120	120	160	140	140	940
<u>Ground Prop &amp; Eq/Other</u>											
Grd Prop & Equip	11	7	10	10	10	20	20	20	30	30	160
Debt Retirement	21	27	8	8	27	26	30	30	26	33	210
Dividends	7	7	5	7	8	10	10	10	14	17	90
Other	2	30	3	5	5	4	-	-	-	-	50
Total GPE & Other	41	71	26	30	50	60	60	60	70	80	510
End Wkg Cap (3wks COE proj)	18	26	34	40	40	50	50	60	60	70	70
<b>TOTAL CAPITAL NEEDS</b>	<b>113</b>	<b>150</b>	<b>120</b>	<b>140</b>	<b>170</b>	<b>230</b>	<b>230</b>	<b>280</b>	<b>270</b>	<b>290</b>	<b>1520</b>
<b>CAPITAL SOURCES</b>											
<u>Beginning Working Capital Operations</u>	14	18	26	34	40	40	50	50	60	60	20
- Net Earnings (Rept'd)	5	13	20	25	30	40	50	50	60	70	360
- Depreciation/Amort	35	38	40	43	42	44	40	45	51	56	400
- Property Sale/Other	3	5	4	4	8	6	10	15	19	14	90
- Other	9	1	-	4	-	-	-	-	-	-	-
Total Operations	52	57	64	76	80	90	100	110	130	140	850
<u>Financing Arrangements</u>											
- Senior Debt-Banks	5	19	30	26	30	50	-	30	-	20	200
- " " -Insko/Others	-	-	-	4	-	-	40	-	30	20	90
- Subord Debt	-	23	-	-	20	10	-	20	-	-	70
- Leases (Cap @ AC Cost)	23	26	-	-	-	30	30	50	40	40	220
- Deposits returnable	16	7	-	-	-	10	10	20	10	10	70
- Stock Sales	-	-	-	-	-	-	-	-	-	-	-
Tot Financing Arrangements	47	75	30	30	50	100	80	120	80	90	650
<b>TOTAL CAPITAL SOURCES</b>	<b>113</b>	<b>150</b>	<b>120</b>	<b>140</b>	<b>170</b>	<b>230</b>	<b>230</b>	<b>280</b>	<b>270</b>	<b>290</b>	<b>1520</b>
<b>FINANCING TO BE ARRANGED</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>4</b>	<b>50</b>	<b>100</b>	<b>80</b>	<b>120</b>	<b>80</b>	<b>90</b>	<b>520</b>

AERO AD: Capital Needs & Sources 1976-1984

WESTERN

## C O M M E N T A R Y

### "MONEYABILITY"

Western's "Moneyability" posture should be perfectly adequate to meet the rather heavy capital spending program that we have projected for the carrier (see Capital Needs & Sources schedule). The crucial indicator is, as always, the cash generation per ASM ratio. After nose-diving in 1974 this key ratio will rebound smartly in 1976 (it was up to 4.38 for the 12 months ended 6/30/76, an increase of 16% from year-end 1975), and from 1977 on will stay above the 5 mills norm.

This solid cash flow permits WAL to bring on debt at only a 1.13:1 ratio to each additional dollar of equity. Starting with a 60:40 Debt/Equity ratio as of 12/31/75, this internal cash generation lowers the D/E ratio to 54:46 by the end of 1984.

Western fails to qualify under the NY State Insurance Law in 1976, but it does manage to requalify in 1977. However, in 1978 and 1979 WAL again does not qualify for insurance company money, as it does not meet the fixed charge coverage test on a five year average. From 1980 on Western does qualify under the law, and a good part of the projected \$90 million in Sr. Debt, excluding bank, (see Capital Needs & Sources schedule) could be supplied by the insurance companies.

Western's operating ratio falls to 91% by 1981 which means that the complementary ROI ratio is able to go above the CAB's 12% standard. The revenue ÷ invested capital ratio increases sharply over the next four years, but then decreases as WAL's investment base swells. No aircraft are leased between 1977-1979 because of the tax advantages of buying aircraft in the new tax law. If, however, WAL wanted to lease some of the 12 planes we have projected that they will receive during the period (see Flt. Equip/GPE schedule), there would be no problem.

Earlier this year Western bought back and retired 2.5MM of its common shares for \$7.3MM in cash, and a \$23MM subordinated note. It is this transaction that causes the debt/stock equity ratio to jump from 148% in 1975 to 211% at the end of this year.

On June 30th Western paid off the outstanding \$29.9MM of its old bank loan, and immediately signed a new \$75MM revolving credit agreement. The carrier drew down \$18.75MM of the new credit but then paid back \$5.25MM. We expect that this credit will be fully utilized by the end of 1978 when it turns into a term loan.

"MONEYABILITY"

MONEYABILITY - INVESTED CAPITAL  
(System - All Services)

	UNIT	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1976-1984
		Actual	Projected									
<b>INVESTED CAPITAL</b>												
Debt	\$ Mil											
Senior Debt: - Banks	"	21	19	49	75	88	122	105	118	110	120	99
Senior Debt-Insc0/Other	"	72	66	60	58	53	46	77	67	83	93	21
Senior Debt-Leases Cap'd	"	80	100	93	86	79	96	113	150	177	195	115
Senior Total - Reptd	"	94	85	109	133	141	168	182	185	193	213	120
Senior Total + Cap Lses	"	174	185	202	219	220	264	295	335	370	408	235
Subordinated	"	30	53	51	48	64	70	67	83	79	67	37
Total Debt - Reptd	"	124	138	160	181	205	238	249	268	272	280	157
Total Debt + Cap Lses	"	204	238	253	267	284	334	362	418	449	475	272
<b>Equity</b>												
Stock	"	138	113	128	146	168	198	238	278	324	377	239
Stock + Sub Debt	"	168	166	179	194	232	268	305	361	403	444	276
Tot Inv Capital-Reptd	"	262	251	288	327	373	436	487	546	596	657	395
Tot Inv Capital + Cap Lses	"	342	351	381	413	452	532	600	696	773	852	510
<b>FLIGHT EQUIPMENT</b>												
Depr Cost	"	263	240	259	278	300	326	359	438	492	530	267
Depr Cost + Mfr Deposit	"	264	257	278	309	351	396	447	505	550	591	327
Depr Cost + " + Cap Lses	"	344	357	371	395	430	492	560	655	727	786	442
<b>WORKING CAPITAL</b>												
Incl Cur Debt/Equiv Wks COE	\$Mill/Wks	18/2	26/3	34/3	40/3	40/3	50/3	50/3	60 /3	60/3	70 /3	52 /1
<b>RATIO ANALYSIS<sup>1/</sup> (G) UNIT/NORM</b>												
Sr Debt ÷ Equity (Stk + Sub)	%-150%	104	111	113	113	95	99	97	93	92	92	(12)pts.
Sr Debt ÷ Fl Eq (Net + Dep + Lse)	%- 80%	51	52	54	55	51	54	53	51	51	52	1 pt.
Cap Lses Share Flt Eq	%- 33%	23	28	25	22	18	20	20	23	24	25	2 pts.
Total Debt ÷ Stock Equity	%-175%	148	211	198	183	169	169	152	150	138	126	(22)pts.
<b>N Y State Ins Law</b>												
Fix Chg Cov - 12 Mos	x-1.25	1.0	1.3	1.5	1.5	1.9	2.1	2.4	2.3	2.3	2.4	1.4x
Fix Chg Cov - 5 yr Avg	x-1.25	1.6	1.6	1.6	1.46	1.4	1.7	1.9	2.0	2.2	2.3	0.7x
Oper Ratio (Airline)	%	98	97	96	96	94	92	91	91	91	91	(7)pts.
Return On Inv (Corp)	%	7.0	7.2	9.1	10.1	10.7	11.7	12.3	11.1	11.6	12.0	5.0pts.
Rev ÷ Tot Inv Cap	\$	1.52	1.68	1.76	1.80	1.84	1.73	1.68	1.59	1.58	1.57	.05¢
Net Cap Comts <sup>2/</sup>	\$ Mil	56	150	170	230	280	320	350	340	340	350	-
Fin Argd / % Argd	"/%	37/66	56/37	26/15	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
<b>Cash Generation</b>												
Flow per \$ Equity	¢/% Chg-30	21/(38)	27/29	31/15	31/-	30/(3)	30/-	28/(7)	25 /(11)	26/4	26/-	5/24
Rev Less COE	Mills/% Chg-5.00											
per ASM		3.79/(46)	4.50/19	5.00/11	5.07/1	5.91/17	6.96/18	7.60/9	7.78/2	8.35/7	8.92/7	5.13/135

Moneyability -  
Inv. Capital 1976-1984  
AERO:

Note: (G) See Glossary.

<sup>1/</sup> 12 months basis. % Changes are from end of prior year.

<sup>2/</sup> Net Cap. Comts. = Next two years projected capital expenditures for flight equipment and GPE.

WESTERN