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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

TECHNICAL REPORT

on the

ROYAL DUTCH AIRLINES PROJECT

NETHERLANDS

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February 15, 1952

Loan Department

MEMORANDUM

Royal Dutch Airlines Project - Netherlands

1. This memorandum covers the comments of the Engineering Staff concerning the technical and business aspects of a project submitted by the Royal Dutch Airlines (KLM) as a basis for a loan from the Bank. The comments are based on documents received from KLM, discussions with representatives of the company, and some supplementary statistical information obtained from local sources.
2. The present KLM fleet consists of 68 aircraft, 18 of which are Lockheed #749 Constellations which have been in service since 1947. In addition, 7 are Douglas DC-6 aircraft, purchased in 1948, and 12 are Convair #240 planes which were added to the fleet in the same year. The remaining aircraft are DC-4, C-54, DC-3, and Dakota types which have been in service since 1945 and 1946. Except in the Caribbean area in which the older aircraft have been used exclusively, KLM equipment at present compares favorably with that of other intercontinental airlines and, as a result, the company has been able to maintain a strong competitive position in the international field.
3. The company is now faced with the necessity of increasing the capacity of the fleet in order to handle the estimated increase in traffic over the next four to five years and, at the same time, maintain its competitive position with respect to the speed and comfort of the aircraft which will be in operation. It must also provide for lower operating costs in anticipation of lower passenger fares and freight rates. To meet these needs, orders were placed in 1950 for 7 Douglas DC-6B and 9 Lockheed #1049C aircraft, the former to be delivered in 1952, the latter in 1953. Orders have recently been placed for 6 Convair #340 aircraft and 1 Douglas DC-6A Liftmaster, delivery on which is expected to be completed by the end of 1953.
4. The selection of aircraft for the modernization program of the company was made after careful study of all available types which had been proven in service as well as those which are in the course of development. The trend in transport aircraft design is in the direction of larger planes which will carry greater payloads at higher speeds and, at the same time, provide fuel and other operating economies over existing types. The aircraft selected by KLM represent the maximum advances which have been made to date in civilian transport aircraft which have been proven in service over a reasonable period of time. This is borne out by the fact that substantial orders for these types are the only ones of consequence on hand with U.S. manufacturers for delivery to both U.S. and foreign civilian airlines. The Constellations will be equipped with compound engines to provide greater fuel economies and the frames of all new planes are designed to permit the installation of gas turbines at such time as this type of engine has been established as dependable for civilian transport service. Since the existing fleet is composed entirely of aircraft of U.S. manufacture, the continued use of such aircraft fits into the existing service facilities of the company and considerably simplifies the stocking of spare parts and instruments. It seems, therefore, that the aircraft on order have been rationally selected as to

type and size and that these aircraft are the most modern and efficient of those which have been proven to be dependable in actual service.

5. The composition of the KLM fleet at present and as anticipated on the completion of delivery of the new planes is given below with the estimated available annual capacity in ton kilometers, based on a standard number of flying hours per type per year.

| Type | 1951 | | 1954 | |
|---------------------|------------------|--------------------------------------|------------------|--------------------------------------|
| | Number of Planes | Yearly Capacity in millions ton - km | Number of Planes | Yearly Capacity in millions ton - km |
| L 749 Constellation | 18 | 115 | 9 | 61 |
| L 1049 " | - | - | 9 | 101 |
| DC-6 | 7 | 46 | 7 | 46 |
| DC-6A | - | - | 1 | 14 |
| DC-6B | - | - | 7 | 55 |
| Convair #240 | 12 | 27 | 12 | 27 |
| Convair #340 | - | - | 6 | 16 |
| DC-4 and C-54 | 10 | 43 | 3 | 15 |
| DC-3 and Dakota | 20 | 9 | 10 | 5 |
| Auster) | 1 | - | - | - |
| Photo-plane) | - | - | 1 | - |
| Totals | 68 | 240 | 65 | 340 |

The 1954 fleet represents the minimum number of planes which are expected to be in service. Actually two additional L 749 Constellations may be retained for service carrying tourist class passengers. Also, disposal of DC-4 and DC-3 aircraft will depend on conditions prevailing at the time that the Convair #340 planes are placed in service.

6. The cost of the new aircraft now on order is as follows:

| Number | Description | Total Cost of Plane Plus Spare Parts in \$ |
|--------|-------------------------------|--|
| 7 | Douglas DC-6B | 10,374,000 |
| 9 | Lockheed Constellation #1049C | 17,032,000 |
| 1 | Douglas Liftmaster | 1,500,000 |
| 6 | Convair #340 | 4,500,000 |
| | Total | 33,406,000 |

In the above estimates, prices include allowance for maximum escalation which applies only on orders for the DC-6A and Convair aircraft and amounts to about 10%. Arrangements have been made for the sale of 7 Constellation #749 aircraft from the present fleet to Lockheed for a total of \$3,450,000. The net cost of the new planes and spare parts will, therefore, be \$29,956,500. Payments through 1951 have totalled \$6,314,100, leaving a balance of \$23,642,400 to be paid in 1952 and 1953. It is possible, also that 2 additional Constellation #749 aircraft and some DC-4 aircraft may be sold in 1953 which would pro-

vide about \$1,000,000 to be applied against the cost of the new Constellations. This would reduce the balance to be paid in these years to about \$22,500,000. No account has been taken of possible sales of DC-3 aircraft.

7. Five of the new Constellations will be placed in service on the New York-Amsterdam route. These planes will be fitted with seats to handle tourist class, regular class and an extra fare class which will be provided with siesta or sleeperette accommodations. These planes are expected to handle all of the anticipated KLM passenger traffic on this route along with a substantial volume of mail and freight traffic. The remaining four new Constellations will be used on the Far East and African routes in conjunction with DC-6 and #749 Constellations.

8. The utilization of the new DC-6B aircraft has not yet been definitely established but it is likely that these planes will be placed in service on the Amsterdam-South American and West Indian routes, replacing #749 Constellations and DC-6 aircraft. The Liftmaster will be used for freight service between Amsterdam and New York. The Convair #340 planes will be placed in service on European lines, replacing 6 Convair #240 planes which are expected to be transferred to the Caribbean service and, in turn, replace DC-3 and DC-4 aircraft.

9. Prior to World War II, like other airlines throughout the world, KLM required a substantial government subsidy in order to cover operating expenses. Following the war, with a rapidly expanding fleet, the company was able to show small operating profits until 1949 when the troubles in Indonesia seriously reduced earnings as a result of the suspension of the Amsterdam-Jakarta service. The situation was made worse by the devaluation of the guilder in September 1949, which resulted in a greater proportional increase in operating costs than in revenues. The company received a government subsidy of 37.2 million guilders in 1949, of which 10 million guilders KLM will have to pay back before 1960 if there are sufficient profits. These funds, in addition to the use of about 2.5 million guilders from reserves, offset an operating loss of about 39.7 million guilders incurred during that year. In 1950, in spite of the highest income in the history of the company, an operating loss of about 2.2 million guilders was encountered. This loss was offset by reducing certain reserves and other items.

10. Gross revenues for 1951 are estimated to reach about 227 million guilders. Expenses, including depreciation, are estimated at 210 million guilders, giving a net income before taxes of about 17 million guilders. These estimates appear to be conservative, based on the latest information available.

11. In estimating future revenues, the company assumes that it will continue to handle about 3-1/2% of the total world air traffic during the next three years. The volume of traffic handled by the company has shown an annual increase of about 17% in the years 1948-1951. For estimating purposes, however, the annual increase for the company has been taken at 14% over the next three years, which compares with an average increase of 13% in total world traffic for all airlines during the post-war period. The available capacity of the flights made in 1950 was about 190 million ton-kilometers and these flights were loaded to about 65% of capacity.

Comparable figures for 1951 are estimated at 226 million and 67% respectively. In 1954, it is estimated that the available capacity of the flights will reach 350 million ton-kilometers and that 67% of this capacity will be utilized as payload.

12. The greatest problem connected with the prediction of revenues over the short term is the effect of tourist fares on traffic volume. Such fares, involving a reduction of about 25% from present levels, will be in effect on May 1, 1952 on the North Atlantic route and parts of the European network. Also, recent reports indicate that competition may reduce freight rates by as much as 25% in the near future on this route. In 1950, the average revenue per ton-kilometer realized by KLM was 1.55 guilders and in 1951 is estimated at 1.49 guilders. It is estimated to drop to 1.37 guilders in 1954. The reduction estimated between 1951 and 1954 amounts to only about 8% and is probably unrealistic if tourist rate traffic develops in substantial volume. However, the extent to which such traffic will represent additional business cannot be accurately estimated but lower average revenues per ton-kilometer should be compensated, at least in part, by improved utilization of available capacity. The following table gives the development of traffic since 1946, the utilization of capacity and revenues, along with estimates through 1954.

| Year | Capacity | | Utilization % | Traffic Revenue in millions of guilders 2/ | Revenue per ton-km in guilders |
|------|--------------------------|----------------|------------------|--|-----------------------------------|
| | Available in millions | Sold ton-km | | | |
| 1946 | 59.0 | 43.1 | 73.1 | 68.1 | 1.58 |
| 1947 | 98.5 | 63.6 | 64.6 | 96.7 | 1.50 |
| 1948 | 161.1 | 99.9 | 62.0 | 145.1 | 1.45 |
| 1949 | 146.5 | 88.3 | 60.3 | 130.0 | 1.47 |
| 1950 | 189.7 | 123.3 | 65.0 | 188.5 | 1.53 |
| 1951 | 226.0 | 152.0 | 67.0 | 227.0 | 1.49 |
| 1954 | 350.0 | 230.0 | 67.0 | 315.0 | 1.37 |

13. Operating expenses of the company showed a definite lower trend during the period 1946-1948 in terms of the unit cost of operation per ton-kilometer of available capacity. In 1949, due to the suspension of Indonesian flights and the devaluation of the guilder, the unit cost increased substantially. In 1951, this cost is expected to reach the level obtained in 1948. The following table shows the trend in operating costs during the post-war period with estimates for 1954.

1/ This figure differs from that given in the table on page 2 by 10 million ton-kilometers. Since the company expects to decrease the utilization of the aircraft above the standard number of flight hours as used for the table on page 2 (e.g. 3100 flight hours per year for the L 749 instead of the standard number of 3000 hours per year). It has been used in the financial calculations submitted by the company and is retained for this purpose. Actually, the capacity in operation is expected to be somewhat greater than that estimated.

2/ Traffic revenue is less than total revenue shown on page 2 by the income derived from management fees, maintenance work for other airlines and similar items.

| Year | Capacity | | Operating Expenses in millions of guilders | Cost per ton-km in guilders | |
|------|--------------------------|----------------|--|-----------------------------|------|
| | Available in millions | Sold ton-km | | Available | Sold |
| 1946 | 59.0 | 43.1 | 68.8 | 1.17 | 1.60 |
| 1947 | 98.5 | 63.6 | 105.5 | 1.07 | 1.66 |
| 1948 | 161.1 | 99.9 | 151.4 | .94 | 1.52 |
| 1949 | 146.5 | 88.3 | 176.8 | 1.21 | 2.02 |
| 1950 | 189.7 | 123.3 | 197.7 | 1.04 | 1.60 |
| 1951 | 226.0 | 152.0 | 210.0 | .93 | 1.38 |
| 1954 | 350.0 | 230.0 | 282.0 | .81 | 1.22 |

14. The company follows the conservative practice of depreciating flight equipment over a period of five years to a value of 10% of the original cost. This procedure has been used in arriving at the estimated operating expenses for 1954. Direct flying costs are now about 70% of total operating costs and this proportion should decrease after new aircraft come into service. It seems that the cost estimated for 1954, .8 guilders per ton-kilometer of available capacity, is reasonably conservative. Direct flying costs, exclusive of depreciation, should decrease by 15%-20% through the use of larger and more efficient aircraft. Increased depreciation will absorb 60-70% of this reduction giving net reduction of about 5-10% over present costs. With total estimated operating expenses of 282 million guilders before taxes in 1954 and a revenue of 1.37 guilders per ton-kilometer, about 207 million ton-kilometers must be sold by the company to break even. Estimated ton-kilometers to be sold amounts to 230 million, so a difference of 23 million ton-kilometers or 10% represents the profit margin in these estimates.

15. Operating expenses in 1950, including depreciation, which were payable in hard currency represented about 37.5% of the total. Hard currency revenues covered all direct hard currency expenses but covered only about 17% of depreciation, leaving a hard currency deficit equivalent to about 19 million guilders (\$5 million). In 1951, about 70% of depreciation in addition to all hard currency operating expenses should be covered, leaving a hard currency deficit of about 7 million guilders (\$2.0 million). The proportion of hard currency revenues in the traffic revenues of the company is estimated to increase from 27% in 1950 to 34% in 1954, due largely to the estimated increase in passenger and freight traffic between Amsterdam and the Americas. Also, it is estimated that hard currency expenditures will be reduced to 34% of total expenses through the use of larger and more efficient aircraft and the reorganization of service facilities. If all of these assumptions are realized, a profit in hard currency after depreciation is estimated to reach the equivalent of 10 million guilders (\$3 million) in 1954. It is believed, however, that the estimated increase in traffic on the New York-Amsterdam route is probably the most optimistic assumption of any used in projecting earnings of the company over the short term.

16. KLM was founded in 1919 as a limited liability company, financed entirely by private capital. In 1929, the government acquired a majority holding in the company which has increased to about 95% at the present time. However, the corporate structure of the company has not been altered and it continues to operate substantially as originally organized, except for government control of major expenditures and the rate structure. The management

of the company is entrusted to a Board of Directors, the smallest majority of which are nominated by the government. Major decisions of the Directors require approval by the Board of Control; four of its fourteen members are also nominated by the government. The chairman of each Board is, however, selected from the private shareholders. Management personnel of the company are appointed by the Board of Directors and do not include any direct representatives of the government. The president, Albert Plesman, has held his position since the company was founded and is highly respected in the field of air transport.

17. The company was originally capitalized at about 1 million guilders. This has been gradually increased to about 123 million guilders up to the present time. Direct government participation amounts to 116 million guilders with additional participation of 5 million guilders by the Netherlands Railways. The government, under a separate law, may grant or guarantee loans to KLM up to 15 million guilders and may further guarantee interest and principal payments on an additional amount of 50 million guilders. The company has, to date, contracted obligations of about 18.6 million guilders, all of which are guaranteed by the government under these arrangements.

18. A balance sheet of the company as of August 31, 1951 is given in Table I. Total assets are carried at about 257 million guilders, of which about 118.5 million guilders are current. Current liabilities amount to about 79.1 million guilders providing net working capital of about 39.4 million guilders.

19. Summary profit and loss statements for 1950 and estimates for 1951 and 1954 are given in Table II. These statements show total income and expenses and, in addition, a breakdown of these items into hard and soft currencies.

20. The cash position of the company through the period 1951-1954 is given in Table III. These calculations show that, without regard for currencies, the company is and will be in a strong cash position and that borrowing is not necessary to carry out the modernization program. The estimated cash on hand at the end of 1954, equivalent to about 3.5 months operating expenses, is more than adequate to cover normal operation. Since additions to depreciation reserves are estimated at 34 million guilders (\$9 million) and payments of dividends and taxes are estimated at 25 million guilders (\$6.6 million), it is evident, that if the estimates are realized, the company could assume substantial additional obligations without seriously affecting the cash position.

21. Conclusions

- i) The types and sizes of aircraft now on order by KLM appear to be well selected for the modernization of the company's fleet.
- ii) The number of aircraft on order is in line with the estimated expansion of traffic over the next four years, considering the contemplated retirement of some existing aircraft.

- iii) The estimated expansion of the over-all traffic to be handled by the company (14% per year) over the next three years, is in line with post-war experience and is considered to be reasonable. The estimated increase in the New York-Amsterdam traffic appears to be most optimistic assumption adopted by the company in estimating future earnings.
- iv) Total operating expenses are conservatively estimated but the reduction in the proportion of hard currency operating expenditures may be somewhat optimistic.
- v) If there is no serious business recession in the U.S. and Europe and no serious deterioration in the international situation, the company should show net profits over the life of the new planes and hard currency earnings should be adequate to cover all operating expenses payable in hard currency, including debt service and depreciation.

E. Wayne Rembert

February 14, 1952

TABLE I

Royal Dutch Airlines

Summary Balance Sheet as of August 31, 1951
in millions of guilders

| <u>Assets</u> | | <u>Liabilities</u> | |
|---|-------------|--|-------------------|
| Flight equipment (depreciated value) | 75.6 | Capital and reserves | 149.2 |
| Fixed assets (depreciated value) | 34.2 | Profit | 7.5 |
| Participation in other companies | 17.2 | Insurance reserve (own risk) | 10.1 |
| Investment of Insurance Reserve and other securities | 11.5 | Long term debts | 11.2 |
| Accounts receivable | 50.6 | Accounts payable and other liabilities | 52.2 |
| Cash and in banks | 65.7 | Prepayments of fares | 26.8 |
| Other assets | <u>11.2</u> | | <u> </u> |
| | 257.0 | | 257.0 |
| Aircraft on order | 79.8 | Obligations in respect of air- craft on order | 79.8 |

TABLE II

Royal Dutch Airlines

Profit and Loss Account 1/
(in millions of guilders)

(estimates)

| | 1950 | | | 1951 | | | 1954 | | |
|------------------------|---------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | Total | Hard | Soft | Total | Hard | Soft | Total | Hard | Soft |
| Traffic Revenue | 188 | 51 | 137 | 227 | 67 | 260 | 315 | 107 | 208 |
| Operating Expenses | 163 | 47 | 116 | 182 | 49 | 133 | 249 | 67 | 182 |
| Operating Income | 25 | 4 | 21 | 45 | 18 | 27 | 66 | 40 | 26 |
| Depr. Flight Equipment | 23 | 23 | - | 25 | 25 | - | 29 | 29 | - |
| Other \$ Depreciation | - | - | - | - | - | - | - | - | - |
| Interest IBRD Loan | - | - | - | - | - | - | 1 | 1 | - |
| Non \$ Depreciation | 2 | - | 2 | 3 | - | 3 | 4 | - | 4 |
| Income before taxes | - | L 19 | P 19 | P 17 | L 7 | P 24 | P 32 | P 10 | P 22 |
| Provision for taxes | - | - | - | <u>2/</u> | - | - | 20 | - | 20 |
| Net Result | - | L 19 | P 19 | P 17 | L 7 | P 24 | P 12 | P 10 | P 2 |

P = profit; L = loss

1/ Does not include management, maintenance for other airlines and similar income and expenses but only to operations of the company's aircraft.

2/ Pro memoria.

TABLE III

Estimated Cash Position

(in millions of guilders)

| | 1951 | | 1952 | | 1953 | | 1954 | |
|---|------|---|------|----|------|----|------|-----|
| | f | - | f | - | f | - | f | - |
| Balance at the beginning of the year | 31 | - | 66 | - | 60 | - | 61 | - |
| Earned Profit (after depreciation before taxes) | 17 | - | 22 | - | 27 | - | 32 | - |
| Depreciation on flight equipment | 25 | - | 28 | - | 37 | - | 30 | - |
| Other Depreciation | 3 | - | 3 | - | 3 | - | 4 | - |
| Prepayments on Turbo-Prop. | - | - | - | - | - | - | - | 10 |
| Investments in Flight Equipment | - | 2 | - | 45 | - | 43 | - | - |
| Investments in Stocks | - | 2 | - | 3 | - | 3 | - | 3 |
| Other Investments | - | 4 | - | 5 | - | 5 | - | 5 |
| Debtors/Creditors, etc. | - | 2 | - | 8 | - | 3 | - | 3 |
| Investment of increase of Insurance Reserve | - | - | - | 3 | - | 4 | - | 4 |
| Amortization Certificates or Dividends | - | - | - | 10 | - | 10 | - | 10 |
| Prepayment on Taxes | - | - | - | - | - | 10 | - | 20 |
| IBRD Loan funds <u>1/</u> | - | - | 15 | - | 12 | - | - | - |
| Amortization on IBRD Loan <u>1/</u> | - | - | - | - | - | - | - | 5.0 |
| Balance at the end of the year | 66 | | 60 | | 61 | | 67 | |

1/ Based on a loan of \$7 million at 4-1/4%, effective March 1, 1952, disbursed in proportion to payments made on aircraft, amortization in ten equal semi-annual payments of principal starting January 1, 1954.