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No. 8

THE FINANCIAL EVALUATION FOR MEDAN (INDONESIA) – COLOMBO (SRI LANKA) SUBMARINE CABLE PROJECT (FOR SRI LANKA)

MARCH 1984

JAPAN INTERNATIONAL COOPERATION AGENCY

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THE FINANCIAL EVALUATION

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Contents

Summary

Taking into account the required cable length and the required number of repeaters etc., based on the route survey, total construction cost of the Medan-Colombo Submarine Cable System is estimated 80.84 Million US $. The construction (investment) cost of the Medan-Colombo Submarine Cable System born by SRI LANKA is estimated 4.0 Million US $.

On the other hand, it is expected that revenues yielded from using this cable system (for telephone, telex, telegraph and leased line service) increase by 10% on an annual average in SRI LANKA.

The financial internal rate of return (FIRR) for SRI LANKA's investment in this cable project, calculated from the total costs and revenues, is 34.0%. Therefore, the investment by SRI LANKA in this cable project can be judged financially feasible, taking into consideration the opportunity cost of capital in SRI LANKA.

1. General

1.1 Medan-Colombo Submarine Cable Project

Medan (Indonesia)-Colombo (Sri Lanka) Submarine Cable Project (M-C Cable Project) is one segment of the Southeast Asia-Middle East-Western Europe submarine cable project (SEA-ME-WE cable project).

This SEA-ME-WE cable project is expected to be completed by the end of 1985.

This planned submarine cable will consist of the following 8 segments.

A.	SINGAPORE	-	MEDAN (INDONESIA)
B.	MEDAN	-	COLOMBO (SRI LANKA)
C.	COLOMBO	-	DJIBOUTI
D.	DJIBOUTI	-	JEDDA (SAUDI ARABIA)
E.	JEDDA	-	SUEZ (EGYPT)
F.	SUEZ - CAIRO	-	ALEXANDRIA
G.	ALEXANDRIA	-	SICILY (ITALY)
H.	SICILY	-	MARSEILLES (FRANCE)

(note) Singapore-Medan segment precedes others and is to be completed in the late 1984.

This planned submarine cable would be the first cable route connecting Southeast Asia, the Middle East, and Western Europe. Furthermore, the new submarine cable will provide alternative routing if the existing satellite telecommunications route is damaged.

1.2 Methodology

This financial evaluation, appended to the report of route survey on the M-C cable, is done for SRI LANKA and INDONESIA which are the landing points of the M-C cable and would invest in it together with other related countries.

The object of this evaluation is to ascertain the Financial Internal Rate of Return on investment (FIRR) by assessing the return of prospective investments by SRI LANKA in the M-C cable project.

Therefore, the following items must be calculated on an annual basis.

1) expected revenues

2) prospective expenses

   a. investment costs
   b. recurrent charges (working capital, annual operation and maintenance cost)

2. Financial Evaluation (FIRR)

2.1 Preconditions

(1) This evaluation is conducted by ascertaining investment costs in the M-C cable by SRI LANKA and service revenues derived from the cable circuits possessed by SRI LANKA in proportion to the investment.

(2) SRI LANKA must use the other submarine cables connecting with and extending from the M-C cable to connect with Southeast Asia and Oceania countries which agreed to provide telecommunication services with SRI LANKA through the M-C cable.

Therefore, SRI LANKA needs to obtain ownership or possess Indefeasible Right of Use (IRU), in proportion to needed circuits, in other existing or planned cables (indicated in Table 7).

These costs for ownership or IRU are summed up as the initial investment.

(3) The life of the projected cable is assumed to be 25 years after R.F.S (1986), so the calculation is made from 1986 to 2010.

(4) Cost calculation is made at the prevailing price level as of 1983.

(5) The data and materials have been collected before the 4th investors meeting held in Paris (Nov. 29 - Dec. 2) of SEA-ME-WE cable project.

All data and materials from SRI LANKA and INDONESIA are collected for the evaluation, so the traffic forecast and needed circuits between SRI LANKA and INDONESIA are not equal to each other's.

(6) The following currency rate is used.
1 US $ = 23 RS = 2.5374 Gold Franc = 235 YEN

2.2 Revenue Evaluation

(1) Services taken into consideration

The evaluation considers international telephone, telex, telegram and leased line services for the revenue calculation.

(2) Related countries

The following 10 countries with which SRI LANKA has agreed to establish the cable route through the M-C cable are considered in the evaluation.

AUSTRALIA, CANADA, HONG KONG, INDONESIA, JAPAN, KOREA, NEW ZEALAND, SINGAPORE, TAIWAN, THAILAND

(3) Traffic forecast

The telephone, telex, and telegram traffic forecasts for the year 1986 are provided in Table 1. These were given by SLTD or were partly estimated based on data from ITU (Asia and Oceania plan Manila 1982).

(4) Traffic growth rates

Growth rates of the telephone, telex, and telegram traffic between SRI LANKA and the related countries are given in Table 2.

As to telephone and telex, the growth rates of outgoing and incoming traffic for the period of 1986 - 1990 are based on SLTD's forecast and the data of plan book mentioned above, and as a general rule the growth rates for the period of 1990 - 1996 are equal to 80 percent of the growth rates for 1986 - 1990. The growth rates after 1996 are estimated to be zero considering no spare cable circuits after 1996 because SRI LANKA owns the needed cable circuits based on the traffic forecast for 1996.

As to telegram, total (incoming and outgoing) telegram traffic is estimated to be decreasing.

(5) Collection rates and accounting rates

The collection and accounting rates of each services in SRI LANKA indicatated in Table 3 are used to calculate the revenues from 1986 to 2010.

Revised collection rates from 1986 are used for the revenue calculation to the following countries, as SRI LANKA is planning to increase the collection rates from 1986.

AUSTRALIA, HONG KONG, JAPAN, NEW ZEALAND, SINGAPORE, INDONESIA, KOREA

Rates between SRI LANKA and the related countries are assumed to be devided equally (50%, 50%).

(6) Revenues

The annual revenues derived from using the M-C cable are indicated in Table 5. The service revenues for each related country are detailed in the annex.
These revenues are calculated by year, service, and related country in the following manner.

1) Telephone and telex revenues

. outgoing traffic revenue =
outgoing traffic x collection rates x traffic percentages via M-C cable

. incoming traffic revenues (deficit) =
(incoming traffic - outgoing traffic) x accounting rates x 1/2 x traffic percentages via M-C cable

Total revenues = outgoing revenues + incoming revenues (deficit)

(note)

traffic percentages via M-C cable (given in Table 4) $= \frac{\text{number of M-C cable circuits}}{\text{number of total circuits}}$

2) Telegram revenues

telegram revenues = total traffic (outgoing + incoming) x collection rate x 1/2 x traffic percentages via M-C cable

3) Leased line revenues

The revenues of leased lines are calucuated with increasing estimated revenues for 1983 (18 mill. RS) by 2 million RS every year, that is, the increase of one voice grade and one telegraph grade leased line every year.

2.3 Cost Evaluations

(1) Investments

1) Needed circuits

Half circuits in the M-C cable and the other cables needed by SRI LANKA are indicated in Table 6. Circuits forecast for the year of 1996, provided by SLTD, are used for the needed cable circuits between SRI LANKA and the related countries. The other cables circuits except the M-C cable and MEDAN-SINGAPORE cable are assumed to be acquired on an IRU basis.

2) Total construction costs

80.84 million US $, which was estimated based on the route survey, is used as the total construction cost of the M-C cable.

The (estimated) construction costs published or provided are used for the other cables except the M-C cable.

A half circuit cost for IRU, equal to the construction cost per half circuit, is considered to decrease 4 percent every year after R.F.S. [See Table 7]

(3) Investment costs and IRU acquisition costs

SRI LANKA's investment costs are listed in Table 7. The costs of ownership investment in the M-C cable and MEDAN-SINGAPORE cable are 91.42 million RS and 37.72 million RS respectively. One third (43.05 mill. RS) of total investment cost in the M-C cable and MEDAN-SINGAPORE cable are assumed to be paid each year for the period of 1984-1986.

All needed IRU circuits in the other cables, are assumed to be acquired in 1986. Therefore, IRU costs per half circuit as of 1986 are estimated for the calculation of IRU acquisition costs.

Total IRU aquisition costs chargeable to SRI LANKA are 72.03 million RS. So, total investment (ownership + IRU investment) costs of SRI LANKA amounts to 201.17 million RS.
No residual (scrap) value of these cables is taken into account.

(2) Running costs
(maintenance, operation and administration costs)

Annual running costs for maintenance, operation, and administration after R.F.S of the cable, are shown in Table 8. These costs consist of summing up the costs for the cable section and the inland (terrestrial) section.

1) Cable section

The costs* for maintenance and operation of the cables are considered equal to 4 percent** of the amount of the investment for the needed cable circuits and the increase is assumed equal to 10 percent every year after 1986.

* These costs consist of costs of terminal operating costs, cableship costs (including standby cost, cable depot cost and risk factor).

** It is generally considered tht 2 - 4 percent of the investment suitable for the maintenance and operation costs of submarine cable. 4 percent of the investments is used for this evaluation, taking into account the cost data of the cables in the Pacific ocean etc.

2) Inland section

The costs for maintenance and operation of inland (terrestrial) lines, plants, and exchange equipments relative to the provision of sevices via the M-C cable are indicated in Table 8 ③.

These costs are estimated at 30 percent of the operating revenues yielded from telecommunication services via the M-C cable, based on SLTD's data from 1978 to 1982.

Administration costs are estimated at 10 percent of the maintenance and operation costs.

(3) Working Capital

Annual increments of working capital required for providing services after R.F.S are described in the Table below.

Generally, the working capital required is said to be around 30 percent of operating revenues. This percentage, however, is considered to decrease in accordance with service scale expansion.

In this evaluation, 30 percent of operation revenues are used for the working capital.

Table 3. 3

(unit: mill. R$)

Year	1986	'87	'88	'89	1990	'91	'92	'93	'94
"Working Capital requirements"	26.85	29.93	33.39	37.31	41.74	45.75	50.19	55.11	60.56
"Annual increments"		3.08	3.46	3.92	4.43	4.01	4.44	4.92	5.45
Year	1995	'96	'97	'98	'99	2000	'01	'02	'03
"Working Capital requirements"	66.59	73.29	73.28	73.27	73.26	73.25	73.24	73.23	73.23
"Annual increments"	6.03	6.70	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0
Year	'04	2005	'06	'07	'08	'09	2010		
"Working Capital requirements"	73.22	73.21	73.20	73.20	73.20	73.19	-73.19		
"Annual increments"	-0.01	-0.01	-0.01	0	0	-0.01	-73.19		

2.4 Financial Internal Rate of Return

Table 9 presents year by year breakdowns of the submarine cables investment costs estimated, running costs and of the revenues calculated in preceding chapters.

Some working capital is to be recovered after 1997 when the revenue decreases compared with the year before and all of the balance is to be recovered at the end of the project life. It is entered as debits to expenditures.

The project life is set at 25 years after R.F.S as stated in the preceding chapter.

The financial internal rate of return (FIRR) for SRI LANKA's investment in this cable project computed based on Table 9, i.e., the discount rate that equalizes the present value as of 1984 of the costs and revenues streams estimated at the price level of 1983, is 34.0 percent**.

** Table of the Net Present Value is shown in Annex 5 for reference.

3. Conclusion

The FIRR (34.0 percent) for SRI LANKA's investment in the M-C cable project is concluded to exceed the opportunity cost of capital (real interest), which is estimated about 5 - 8 percent, judging from interest and the increase rates of consumer price index in SRI LANKA. Therefore, it can be judged that the investment by SRI LANKA in the M-C cable project is financially feasible.

Table 1 Traffic Forecast for 1986

SRI LANKA relations	Telephone (Thousand minutes)			Telex (Thousand minutes)			TG (Thousand words)
	Outgoing	Incoming	Total	Outgoing	Incoming	Total	Total
AUSTRALIA	119.0	814.3	933.3	73.7	63.5	137.2	209.0
CANADA	76.0	157.3	233.3	63.3	30.3	93.6	119.0
HONG KONG	167.0	279.8	446.8	663.0	477.9	1140.9	213.0
INDONESIA	17.0	21.4	38.4	27.0	34.0	61.0	46.0
JAPAN	228.5	406.7	635.2	704.4	464.0	1168.4	846.0
KOREA	18.7	21.0	39.7	99.0	93.0	192.0	43.0
SINGAPORE	514.8	969.6	1484.4	1030.3	468.2	1498.5	455.0
TAIWAN	9.0	12.0	21.0	81.2	81.2	162.4	93.0
THAILAND	34.2	31.8	66.0	27.7	34.5	62.2	115.0
NEW ZEALAND	12.6	8.2	20.8	20.0	13.0	33.0	38.0

Table 2 Growth Rate (unit: %)

Period / Relations	TF Outgoing			TF Incoming			TLX OUT			TLX IN			TG		
	1	2	3	1	2	3	1	2	3	1	2	3	4	5	6
AUSTRALIA	10	8	0	20	16	0	10	8	0	11	9	0	-10	-8	-6
CANADA	9	7	0	9	7	0	12	10	0	10	8	0	-10	-8	-6
HONG KONG	10	8	0	9	7	0	10	8	0	12	10	0	-10	-8	-6
INDONESIA	8	8	0	8	8	0	12	10	0	12	10	0	-10	-8	-6
JAPAN	10	8	0	11	9	0	10	8	0	10	8	0	-10	-8	-6
KOREA	10	10	0	10	10	0	12	10	0	12	10	0	-10	-8	-6
NEW ZEALAND	10	10	0	10	10	0	12	10	0	12	10	0	-10	-8	-6
SINGAPORE	10	8	0	18	14	0	10	8	0	13	10	0	-10	-8	-6
TAIWAN	8	8	0	8	8	0	10	10	0	10	10	0	-10	-8	-6
THAILAND	10	8	0	10	8	0	10	8	0	13	10	0	-10	-8	-6

(Note) ① Year 1986 - 1990 ④ 1986 - 1990
② Year 1990 - 1996 ⑤ 1990 - 2000
③ Year 1996 - 2010 ⑥ 2000 - 2010

Table 3 Collection Rates and Accounting Rates

SRI LANKA relations	Telephone		Telex		Telegraph
	Collection rate	Accounting rate	Collection rate	Accounting rate	Collection rate
AUSTRALIA	54 RS/min	6.12 GF/min	48 RS/min	5.08 GF/min	3.45 RS/word
CANADA	49	6.12	54	9.18	3.45
HONG KONG	54	4.1	48	3.43	3.45
INDONESIA	54	9.0	54	9.18	3.45
JAPAN	54	7.5	48	9.18	3.45
KOREA	54	12.0	48	9.18	3.45
NEW ZEALAND	54	6.12	48	5.08	3.45
SINGAPORE	54	4.1	48	3.43	3.45
TAIWAN	54	9.0	54	9.0	3.45
THAILAND	65	12.86	54	9.18	3.45

Table 4 Traffic Ratio via MEDAN-COLOMBO Cable

SRI LANKA relations	Traffic ratio	SRI LANKA relations	Traffic ratio
AUSTRALIA	20%	KOREA	30%
CANADA	75%	NEW ZEALAND	100%
HONG KONG	10%	SIGNAPORE	65%
INDONESIA	50%	TAIWAN	30%
JAPAN	30%	THAILAND	30%

Table 5 Revenues

(Unit: Mill. RS)

Year	(1) Telephone	(2) Telex	(3) Telegram	(4) Leased Line	(5) Total
1986	42.07	43.56	1.46	2.40	89.49
87	47.67	48.19	1.29	2.60	99.75
88	54.03	53.28	1.18	2.80	111.29
89	61.39	58.91	1.06	3.00	124.36
1990	69.81	65.16	0.95	3.20	139.12
91	77.52	70.70	0.87	3.40	152.49
92	86.15	76.75	0.80	3.60	167.30
93	95.85	83.30	0.74	3.80	183.69
94	106.75	90.42	0.69	4.00	201.86
1995	118.95	98.17	0.64	4.20	221.96
96	132.72	106.61	0.58	4.40	244.31
97	132.72	106.61	0.54	4.40	244.27
98	132.72	106.61	0.49	4.40	244.22
99	132.72	106.61	0.46	4.40	244.19
2000	132.72	106.61	0.43	4.40	244.16
01	132.72	106.61	0.40	4.40	244.13
02	132.72	106.61	0.38	4.40	244.11
03	132.72	106.61	0.37	4.40	244.10
04	132.72	106.61	0.33	4.40	244.06
2005	132.72	106.61	0.30	4.40	244.03
06	132.72	106.61	0.28	4.40	244.01
07	132.72	106.61	0.27	4.40	244.00
08	132.72	106.61	0.26	4.40	243.99
09	132.72	106.61	0.23	4.40	243.96
2010	132.72	106.61	0.23	4.40	243.96
Total	2750.99	2287.59	15.23	99.00	5152.81

Table 6 Needed Circuits in the each submarine cable for SRI LANKA

Cables / Needed Circuits / Relations		MEDAN - COLOMBO	MEDAN - SINGAPORE	SINGAPORE - HONG KONG	SINGAPORE - PHILIPPINES	PHILIPPINES - TAIWAN	PHIL - OKINAWA	OKINAWA - NINOMIYA	JAPAN - KOREA	SINGAPORE - THAILAND	SINGAPORE - DJAKARTA	DJAKARTA - PERTH	AUSTRALIA - NEW ZEALAND	JAPAN - GUAM - HAWAII - CANADA (TPC-II - ANZCAN)
AUSTRALIA	17	17	17								17 (IRU)	17 (IRU)		
CANADA	6	6	6		6 (IRU)		6 (IRU)							6 (IRU)
HONG KONG	6	6	6	6 (IRU)										
INDONESIA	12	12												
JAPAN	9	9	9		9 (IRU)		9 (IRU)	9 (IRU)						
KOREA	3	3	3		3 (IRU)		3 (IRU)		3 (IRU)					
NEW ZEALAND	1	1	1								1 (IRU)	1 (IRU)	1 (IRU)	
SINGAPORE	60	60	60											
TAIWAN	2	2	2		2 (IRU)	2 (IRU)								
THAILAND	2	2	2							2 (IRU)				
TOTAL	118	118	106	6	20	2	18	9	3	2	18	18	1	6

(note) (IRU) indicates IRU investment

Table 7 Investment Cost in the cables for SRI LANKA

Cables	Total construction cost (mill. US $)	Cable capacity	Needed half circuits	Investment Share IRU cost [Year 1986]	Investment cost thousand US$ (million RS)
COLOMBO - MEDAN	80.84	1200	118 ch	4.92%	3975 (91.42 mill. RS)
MEDAN - SINGAPORE	39	1260	106 ch	4.21%	1640 (37.72)
SINGAPORE - HONG KONG (planned)	120 * (1985)	1380	6 ch	IRU 41700 US $/half circuit	250 (5.75)
SINGAPORE - PHILIPPINES (ASEAN P-S)	56 (1978)	1380	20 ch	IRU 14600	292 (6.72)
PHILIPPINES - TAIWAN (TAILU)	29 (1980)	480	2 ch	IRU 23600	47 (1.08)
PHILIPPINES - OKINAWA (JAP) (OLU)	25 (1977)	1200	18 ch	IRU 7200	130 (2.99)
OKINAWA - NINOMIYA	98 (1984)	1600	9 ch	IRU 29400	265 (6.09)
JAPAN - KOREA	23 (1978)	2700	3 ch	IRU 3100	9 (0.21)
SINGAPORE - THAILAND (S-M-T)	66 (1983)	480	1 ch	IRU 60800	122 (2.80)
SINGAPORE - DJAKARTA (planned)	66.4 (1986)	900	18 ch	IRU 36900	664 (15.27)
DJAKARTA - PERTH (AUSTRALIA) (planned)	120.2 (1986)	1380	18 ch	IRU 43600	785 (18.06)
AUSTRALIA - NEW ZEALAND	14.3 (1976)	480	1 ch	IRU 9900	10 (0.23)
JAPAN - GUAM - HAWAII - CANADA (TPC-II - ANZCAN)	123 + 144 (1975) (1983)	845/1380	6 ch	IRU 93000	558 (12.83)
				Total	8747 (201.17)

(Note) * ( ) indicates the constructed year or expected construction year.

Table 8 Running Cost (Cost of Maintenance, Operation and Administration)

(Unit: Million RS)

Year	① M-C Cable	② Other Cables	③ Inland	④ Inland	⑤ Total
	Maintenance, operation cost		Maintenance, operation	Administration	
1986	3.66	4.33	26.85	2.69	37.53
1987	4.02	4.77	29.93	2.99	41.71
1988	4.42	5.24	33.39	3.34	46.39
1989	4.87	5.77	37.31	3.73	51.68
1990	5.35	6.35	41.74	4.17	57.61
1991	5.89	6.98	45.75	4.58	63.20
1992	6.48	7.68	50.19	5.02	69.37
1993	7.13	8.45	55.11	5.51	76.20
1994	7.84	9.29	60.56	6.06	83.75
1995	8.62	10.22	66.59	6.66	92.09
1996	9.48	11.24	73.29	7.33	101.34
1997	10.43	12.37	73.28	7.33	103.41
1998	11.48	13.60	73.27	7.33	105.68
1999	12.62	14.96	73.26	7.33	108.17
2000	13.89	16.46	73.25	7.33	110.93
2001	15.28	18.10	73.24	7.32	113.94
2002	16.80	19.91	73.23	7.32	117.26
2003	18.48	21.91	73.23	7.32	120.94
2004	20.33	24.10	73.22	7.32	124.97
2005	22.36	26.51	73.21	7.32	129.40
2006	24.60	29.16	73.20	7.32	134.28
2007	27.06	32.07	73.20	7.32	139.65
2008	29.77	35.28	73.20	7.32	145.57
2009	32.74	38.81	73.19	7.32	152.06
2010	36.02	42.69	73.19	7.32	159.22
Total	359.62	426.25	1545.88	154.60	2486.35

(note) ① = M-C cable investment cost x 0.04 x (1.1)t-1986

② = Other cables investment cost x 0.04 x (1.1)t-1986

③ = Revenues via M-C cable x 0.3

④ = ③ x 0.1

⑤ = ① + ② + ③ + ④

Table 9 I R R

Unit = ten thousand RS
IRR = 33.95%

Year	Working capital	Running Cost	Investment	Revenues	cash flow	Cumulative capital	Present Value
1984	0	0	4,304	0	-4,304	-4,304	-4,304
1985	0	0	4,305	0	-4,305	-8,609	-3,214
1986	2,685	3,753	11,508	8,949	-8,997	-17,606	-5,014
1987	308	4,171	0	9,975	5,496	-12,110	2,286
1988	346	4,639	0	11,129	6,144	-5,966	1,908
1989	392	5,168	0	12,436	6,876	910	1,596
1990	443	5,761	0	13,912	7,708	8,618	1,334
1991	401	6,320	0	15,249	8,528	17,146	1,102
1992	444	6,937	0	16,730	9,349	26,495	902
1993	492	7,620	0	18,369	10,257	36,752	739
1994	545	8,375	0	20,186	11,266	48,018	606
1995	603	9,209	0	22,196	12,384	60,402	497
1996	670	10,134	0	24,431	13,627	74,029	408
1997	-1	10,341	0	24,427	14,087	88,116	315
1998	-1	10,568	0	24,422	13,855	101,971	231
1999	-1	10,817	0	24,419	13,603	115,574	170
2000	-1	11,093	0	24,416	13,324	128,898	124
2001	-1	11,394	0	24,413	13,020	141,918	90
2002	-1	11,726	0	24,411	12,686	154,604	66
2003	0	12,094	0	24,410	12,316	166,920	48
2004	-1	12,497	0	24,406	11,910	178,830	34
2005	-1	12,940	0	24,403	11,464	190,294	25
2006	-1	13,428	0	24,401	10,974	201,268	18
2007	0	13,965	0	24,400	10,435	211,703	13
2008	0	14,557	0	24,399	9,842	221,545	9
2009	-1	15,206	0	24,396	9,191	230,736	6
2010	-7,319	15,922	0	24,396	15,793	246,529	8

ANNEX

TELEPHONE REVENUES

(Note)

① : Outgoing Traffic

② : Incoming Traffic

③ : (Incoming − Outgoing) Traffic

④ : Outgoing Traffic Revenues
= ① × Collection Rates

⑤ : Incoming Traffic Revenues (or Expenses)
= ③ × Accounting Rates × 1/2

⑥ : Total Revenues = ④ + ⑤

⑦ : Revenues via M − C Cable
= ④ + ⑤ × Traffic Ratio via M − C Cable

Relation = AUSTRALIA

Year	① OUT	② IN	③ IN--OUT	Revenue ④ out	Revenue ⑤ in	⑥ Total	⑦ C-revenue
1986	119.00	814.30	695.30	6.43	19.29	25.72	5.14
1987	130.90	977.16	846.26	7.07	23.47	30.54	6.11
1988	143.99	1,172.59	1,028.60	7.78	28.53	36.31	7.26
1989	158.39	1,407.11	1,248.72	8.55	34.64	43.19	8.64
1990	174.23	1,688.53	1,514.30	9.41	42.00	51.41	10.28
1991	188.17	1,958.70	1,770.53	10.16	49.11	59.27	11.85
1992	203.22	2,272.09	2,068.87	10.97	57.38	68.35	13.67
1993	219.48	2,635.62	2,416.15	11.85	67.02	78.87	15.77
1994	237.04	3,057.32	2,820.29	12.80	78.23	91.03	18.21
1995	256.00	3,546.50	3,290.50	13.82	91.27	105.09	21.02
1996	276.48	4,113.93	3,837.46	14.93	106.44	121.37	24.27
1997	276.48	4,113.93	3,837.46	14.93	106.44	121.37	24.27
1998	276.48	4,113.93	3,837.46	14.93	106.44	121.37	24.27
1999	276.48	4,113.93	3,837.46	14.93	106.44	121.37	24.27
2000	276.48	4,113.93	3,837.46	14.93	106.44	121.37	24.27
2001	276.48	4,113.93	3,837.46	14.93	106.44	121.37	24.27
2002	276.48	4,113.93	3,837.46	14.93	106.44	121.37	24.27
2003	276.48	4,113.93	3,837.46	14.93	106.44	121.37	24.27
2004	276.48	4,113.93	3,837.46	14.93	106.44	121.37	24.27
2005	276.48	4,113.93	3,837.46	14.93	106.44	121.37	24.27
2006	276.48	4,113.93	3,837.46	14.93	106.44	121.37	24.27
2007	276.48	4,113.93	3,837.46	14.93	106.44	121.37	24.27
2008	276.48	4,113.93	3,837.46	14.93	106.44	121.37	24.27
2009	276.48	4,113.93	3,837.46	14.93	106.44	121.37	24.27
2010	276.48	4,113.93	3,837.46	14.93	106.44	121.37	24.27
Total				322.79	2,087.54	2,410.33	482.00

Relation = CANADA

Year	OUT	IN	IN-OUT	Revenue		Total	C-revenue
				out	in		
1986	76.00	157.30	81.30	3.72	2.26	5.98	4.49
1987	82.84	171.46	88.62	4.06	2.46	6.52	4.89
1988	90.30	186.89	96.59	4.42	2.68	7.10	5.33
1989	98.42	203.71	105.29	4.82	2.92	7.74	5.81
1990	107.28	222.04	114.76	5.26	3.18	8.44	6.33
1991	114.79	237.58	122.79	5.62	3.41	9.03	6.77
1992	122.83	254.22	131.39	6.02	3.64	9.66	7.25
1993	131.42	272.01	140.59	6.44	3.90	10.34	7.76
1994	140.62	291.05	150.43	6.89	4.17	11.06	8.30
1995	150.47	311.43	160.96	7.37	4.46	11.83	8.87
1996	161.00	333.23	172.23	7.89	4.78	12.67	9.50
1997	161.00	333.23	172.23	7.89	4.78	12.67	9.50
1998	161.00	333.23	172.23	7.89	4.78	12.67	9.50
1999	161.00	333.23	172.23	7.89	4.78	12.67	9.50
2000	161.00	333.23	172.23	7.89	4.78	12.67	9.50
2001	161.00	333.23	172.23	7.89	4.78	12.67	9.50
2002	161.00	333.23	172.23	7.89	4.78	12.67	9.50
2003	161.00	333.23	172.23	7.89	4.78	12.67	9.50
2004	161.00	333.23	172.23	7.89	4.78	12.67	9.50
2005	161.00	333.23	172.23	7.89	4.78	12.67	9.50
2006	161.00	333.23	172.23	7.89	4.78	12.67	9.50
2007	161.00	333.23	172.23	7.89	4.78	12.67	9.50
2008	161.00	333.23	172.23	7.89	4.78	12.67	9.50
2009	161.00	333.23	172.23	7.89	4.78	12.67	9.50
2010	161.00	333.23	172.23	7.89	4.78	12.67	9.50
Total				172.97	104.78	277.75	208.30

Relation = HONG KONG

Year	OUT	IN	IN—OUT	Revenue		Total	C-revenue
				out	in		
1986	167.00	279.80	112.80	9.02	2.10	11.12	1.11
1987	183.70	304.98	121.28	9.92	2.25	12.17	1.22
1988	202.07	332.43	130.36	10.91	2.42	13.33	1.33
1989	222.28	362.35	140.07	12.00	2.60	14.60	1.46
1990	244.50	394.96	150.46	13.20	2.80	16.00	1.60
1991	264.07	422.61	158.54	14.26	2.95	17.21	1.72
1992	285.19	452.19	167.00	15.40	3.10	18.50	1.85
1993	308.01	483.84	175.84	16.63	3.27	19.90	1.99
1994	332.65	517.71	185.07	17.96	3.44	21.40	2.14
1995	359.26	553.95	194.70	19.40	3.62	23.02	2.38
1996	388.00	592.73	204.73	20.95	3.80	24.75	2.47
1997	388.00	592.73	204.73	20.95	3.80	24.75	2.47
1998	388.00	592.73	204.73	20.95	3.80	24.75	2.47
1999	388.00	592.73	204.73	20.95	3.80	24.75	2.47
2000	388.00	592.73	204.73	20.95	3.80	24.75	2.47
2001	388.00	592.73	204.73	20.95	3.80	24.75	2.47
2002	388.00	592.73	204.73	20.95	3.80	24.75	2.47
2003	388.00	592.73	204.73	20.95	3.80	24.75	2.47
2004	388.00	592.73	204.73	20.95	3.80	24.75	2.47
2005	388.00	592.73	204.73	20.95	3.80	24.75	2.47
2006	388.00	592.73	204.73	20.95	3.80	24.75	2.47
2007	388.00	592.73	204.73	20.95	3.80	24.75	2.47
2008	388.00	592.73	204.73	20.95	3.80	24.75	2.47
2009	388.00	592.73	204.73	20.95	3.80	24.75	2.47
2010	388.00	592.73	204.73	20.95	3.80	24.75	2.47
Total				452.95	85.55	538.50	53.77

Relation = INDONESIA

Year	OUT	IN	IN--OUT	Revenue		Total	C-revenue
				out	in		
1986	17.00	21.40	4.40	0.92	0.18	1.10	0.55
1987	18.36	23.11	4.75	0.99	0.19	1.18	0.59
1988	19.83	24.96	5.13	1.07	0.21	1.28	0.64
1989	21.42	26.96	5.54	1.16	0.23	1.39	0.70
1990	23.13	29.11	5.99	1.25	0.24	1.49	0.75
1991	24.93	31.44	6.47	1.35	0.26	1.61	0.81
1992	26.98	33.96	6.98	1.46	0.28	1.74	0.87
1993	29.14	36.68	7.54	1.57	0.31	1.88	0.94
1994	31.47	39.61	8.14	1.70	0.33	2.03	1.02
1995	33.98	42.78	8.80	1.84	0.36	2.20	1.10
1996	36.70	46.20	9.50	1.98	0.39	2.37	1.19
1997	36.70	46.20	9.50	1.98	0.39	2.37	1.19
1998	36.70	46.20	9.50	1.98	0.39	2.37	1.19
1999	36.70	46.20	9.50	1.98	0.39	2.37	1.19
2000	36.70	46.20	9.50	1.98	0.39	2.37	1.19
2001	36.70	46.20	9.50	1.98	0.39	2.37	1.19
2002	36.70	46.20	9.50	1.98	0.39	2.37	1.19
2003	36.70	46.20	9.50	1.98	0.39	2.37	1.19
2004	36.70	46.20	9.50	1.98	0.39	2.37	1.19
2005	36.70	46.20	9.50	1.98	0.39	2.37	1.19
2006	36.70	46.20	9.50	1.98	0.39	2.37	1.19
2007	36.70	46.20	9.50	1.98	0.39	2.37	1.19
2008	36.70	46.20	9.50	1.98	0.39	2.37	1.19
2009	36.70	46.20	9.50	1.98	0.39	2.37	1.19
2010	36.70	46.20	9.50	1.98	0.39	2.37	1.19
Total				43.01	8.44	51.45	25.82

Relation = JAPAN

Year	OUT	IN	IN--OUT	Revenue		Total	C-revenue
				out	in		
1986	228.50	406.70	178.20	12.34	6.06	18.40	5.52
1987	251.35	451.44	200.09	13.57	6.80	20.37	6.11
1988	276.49	501.10	224.61	14.93	7.63	22.56	6.77
1989	304.13	556.22	252.08	16.42	8.57	24.99	7.50
1990	334.55	617.40	282.85	18.07	9.61	27.68	8.30
1991	361.31	672.97	311.65	19.51	10.59	30.10	9.03
1992	390.22	733.53	343.32	21.07	11.67	32.74	9.82
1993	421.43	799.55	378.12	22.76	12.85	35.61	10.68
1994	455.15	871.51	416.36	24.58	14.15	38.73	11.62
1995	491.56	949.95	458.39	26.54	15.58	42.12	12.64
1996	530.88	1,035.44	504.56	28.67	17.15	45.82	13.75
1997	530.88	1,035.44	504.56	28.67	17.15	45.82	13.75
1998	530.88	1,035.44	504.56	28.67	17.15	45.82	13.75
1999	530.88	1,035.44	504.56	28.67	17.15	45.82	13.75
2000	530.88	1,035.44	504.56	28.67	17.15	45.82	13.75
2001	530.88	1,035.44	504.56	28.67	17.15	45.82	13.75
2002	530.88	1,035.44	504.56	28.67	17.15	45.82	13.75
2003	530.88	1,035.44	504.56	28.67	17.15	45.82	13.75
2004	530.88	1,035.44	504.56	28.67	17.15	45.82	13.75
2005	530.88	1,035.44	504.56	28.67	17.15	45.82	13.75
2006	530.88	1,035.44	504.56	28.67	17.15	45.82	13.75
2007	530.88	1,035.44	504.56	28.67	17.15	45.82	13.75
2008	530.88	1,035.44	504.56	28.67	17.15	45.82	13.75
2009	530.88	1,035.44	504.56	28.67	17.15	45.82	13.75
2010	530.88	1,035.44	504.56	28.67	17.15	45.82	13.75
Total				619.84	360.76	980.60	294.24

Relation = KOREA

Year	OUT	I N	IN--OUT	Revenue		Total	C-revenue
				out	in		
1986	18.70	21.00	2.30	1.01	0.13	1.14	0.34
1987	20.57	23.10	2.53	1.11	0.14	1.25	0.38
1988	22.63	25.41	2.78	1.22	0.15	1.37	0.41
1989	24.89	27.95	3.06	1.34	0.17	1.51	0.45
1990	27.38	30.75	3.37	1.48	0.18	1.66	0.50
1991	30.12	33.82	3.70	1.63	0.20	1.83	0.55
1992	33.13	37.20	4.07	1.79	0.22	2.01	0.60
1993	36.44	40.92	4.48	1.97	0.24	2.21	0.66
1994	40.09	45.02	4.93	2.16	0.27	2.43	0.73
1995	44.09	49.52	5.42	2.38	0.29	2.67	0.80
1996	48.50	54.47	5.97	2.62	0.32	2.94	0.88
1997	48.50	54.47	5.97	2.62	0.32	2.94	0.88
1998	48.50	54.47	5.97	2.62	0.32	2.94	0.88
1999	48.50	54.47	5.97	2.62	0.32	2.94	0.88
2000	48.50	54.47	5.97	2.62	0.32	2.94	0.88
2001	48.50	54.47	5.97	2.62	0.32	2.94	0.88
2002	48.50	54.47	5.97	2.62	0.32	2.94	0.88
2003	48.50	54.47	5.97	2.62	0.32	2.94	0.88
2004	48.50	54.47	5.97	2.62	0.32	2.94	0.88
2005	48.50	54.47	5.97	2.62	0.32	2.94	0.88
2006	48.50	54.47	5.97	2.62	0.32	2.94	0.88
2007	48.50	54.47	5.97	2.62	0.32	2.94	0.88
2008	48.50	54.47	5.97	2.62	0.32	2.94	0.88
2009	48.50	54.47	5.97	2.62	0.32	2.94	0.88
2010	48.50	54.47	5.97	2.62	0.32	2.94	0.88
Total				55.39	6.79	62.18	18.62

Relation = NEW ZEALAND

Year	OUT	IN	IN—OUT	Revenue		Total	C-revenue
				out	in		
1986	12.60	8.20	— 4.40	0.68	—0.12	0.56	0.56
1987	13.86	9.02	— 4.84	0.75	—0.13	0.62	0.62
1988	15.25	9.92	— 5.32	0.82	—0.15	0.67	0.67
1989	16.77	10.91	— 5.86	0.91	—0.16	0.75	0.75
1990	18.45	12.01	— 6.44	1.00	—0.18	0.82	0.82
1991	20.29	13.21	— 7.09	1.10	—0.20	0.90	0.90
1992	22.32	14.53	— 7.79	1.21	—0.22	0.99	0.99
1993	24.55	15.98	— 8.57	1.33	—0.24	1.09	1.09
1994	27.01	17.58	— 9.43	1.46	—0.26	1.20	1.20
1995	29.71	19.34	—10.37	1.60	—0.29	1.31	1.31
1996	32.68	21.27	—11.41	1.76	—0.32	1.44	1.44
1997	32.68	21.27	—11.41	1.76	—0.32	1.44	1.44
1998	32.68	21.27	—11.41	1.76	—0.32	1.44	1.44
1999	32.68	21.27	—11.41	1.76	—0.32	1.44	1.44
2000	32.68	21.27	—11.41	1.76	—0.32	1.44	1.44
2001	32.68	21.27	—11.41	1.76	—0.32	1.44	1.44
2002	32.68	21.27	—11.41	1.76	—0.32	1.44	1.44
2003	32.68	21.27	—11.41	1.76	—0.32	1.44	1.44
2004	32.68	21.27	—11.41	1.76	—0.32	1.44	1.44
2005	32.68	21.27	—11.41	1.76	—0.32	1.44	1.44
2006	32.68	21.27	—11.41	1.76	—0.32	1.44	1.44
2007	32.68	21.27	—11.41	1.76	—0.32	1.44	1.44
2008	32.68	21.27	—11.41	1.76	—0.32	1.44	1.44
2009	32.68	21.27	—11.41	1.76	—0.32	1.44	1.44
2010	32.68	21.27	—11.41	1.76	—0.32	1.44	1.44
Total				37.26	—6.75	30.51	30.51

Relation = SINGAPORE

Year	OUT	IN	IN—OUT	Revenue		Total	C-revenue
				out	in		
1986	514.80	969.60	454.80	27.80	8.45	36.25	23.56
1987	566.28	1,144.13	577.85	30.58	10.74	41.32	26.86
1988	622.91	1,350.07	727.16	33.64	13.51	47.15	30.65
1989	685.20	1,593.08	907.88	37.00	16.87	53.87	35.02
1990	753.72	1,879.84	1,126.12	40.70	20.93	61.63	40.06
1991	814.02	2,143.02	1,329.00	43.96	24.70	68.66	44.63
1992	879.14	2,443.04	1,563.90	47.47	29.06	76.53	49.74
1993	949.47	2,785.06	1,835.60	51.27	34.11	85.38	55.50
1994	1,025.43	3,174.97	2,149.55	55.37	39.94	95.31	61.95
1995	1,107.46	3,619.47	2,512.01	59.80	46.68	106.48	69.21
1996	1,196.06	4,126.19	2,930.14	64.59	54.45	119.04	77.38
1997	1,196.06	4,126.19	2,930.14	64.59	54.45	119.04	77.38
1998	1,196.06	4,126.19	2,930.14	64.59	54.45	119.04	77.38
1999	1,196.06	4,126.19	2,930.14	64.59	54.45	119.04	77.38
2000	1,196.06	4,126.19	2,930.14	64.59	54.45	119.04	77.38
2001	1,196.06	4,126.19	2,930.14	64.59	54.45	119.04	77.38
2002	1,196.06	4,126.19	2,930.14	64.59	54.45	119.04	77.38
2003	1,196.06	4,126.19	2,930.14	64.59	54.45	119.04	77.38
2004	1,196.06	4,126.19	2,930.14	64.59	54.45	119.04	77.38
2005	1,196.06	4,126.19	2,930.14	64.59	54.45	119.04	77.38
2006	1,196.06	4,126.19	2,930.14	64.59	54.45	119.04	77.38
2007	1,196.06	4,126.19	2,930.14	64.59	54.45	119.04	77.38
2008	1,196.06	4,126.19	2,930.14	64.59	54.45	119.04	77.38
2009	1,196.06	4,126.19	2,930.14	64.59	54.45	119.04	77.38
2010	1,196.06	4,126.19	2,930.14	64.59	54.45	119.04	77.38
Total				1,396.44	1,061.74	2,458.18	1,597.88

Relation = TAIWAN

Year	OUT	IN	IN-OUT	Revenue		Total	C-revenue
				out	in		
1986	9.00	12.00	3.00	0.49	0.12	0.61	0.18
1987	9.72	12.96	3.24	0.52	0.13	0.65	0.20
1988	10.50	14.00	3.50	0.57	0.14	0.71	0.21
1989	11.34	15.12	3.78	0.61	0.15	0.76	0.23
1990	12.24	16.33	4.08	0.66	0.17	0.83	0.25
1991	13.22	17.63	4.41	0.71	0.18	0.89	0.27
1992	14.28	19.04	4.76	0.77	0.19	0.96	0.29
1993	15.42	20.57	5.14	0.83	0.21	1.04	0.31
1994	16.66	22.21	5.55	0.90	0.23	1.13	0.34
1995	17.99	23.99	6.00	0.97	0.24	1.21	0.36
1996	19.43	25.91	6.48	1.05	0.26	1.31	0.39
1997	19.43	25.91	6.48	1.05	0.26	1.31	0.39
1998	19.43	25.91	6.48	1.05	0.26	1.31	0.39
1999	19.43	25.91	6.48	1.05	0.26	1.31	0.39
2000	19.43	25.91	6.48	1.05	0.26	1.31	0.39
2001	19.43	25.91	6.48	1.05	0.26	1.31	0.39
2002	19.43	25.91	6.48	1.05	0.26	1.31	0.39
2003	19.43	25.91	6.48	1.05	0.26	1.31	0.39
2004	19.43	25.91	6.48	1.05	0.26	1.31	0.39
2005	19.43	25.91	6.48	1.05	0.26	1.31	0.39
2006	19.43	25.91	6.48	1.05	0.26	1.31	0.39
2007	19.43	25.91	6.48	1.05	0.26	1.31	0.39
2008	19.43	25.91	6.48	1.05	0.26	1.31	0.39
2009	19.43	25.91	6.48	1.05	0.26	1.31	0.39
2010	19.43	25.91	6.48	1.05	0.26	1.31	0.39
Total				22.78	5.66	28.44	8.49

Relation = THAILAND

Year	OUT	IN	IN—OUT	Revenue		Total	C-revenue
				out	in		
1986	34.20	31.80	—2.40	2.22	—0.14	2.08	0.62
1987	37.62	34.98	—2.64	2.45	—0.15	2.30	0.69
1988	41.38	38.48	—2.90	2.69	—0.17	2.52	0.76
1989	45.52	42.33	—3.19	2.96	—0.19	2.77	0.83
1990	50.07	46.56	—3.51	3.25	—0.20	3.05	0.92
1991	54.08	50.28	—3.79	3.52	—0.22	3.30	0.99
1992	58.40	54.31	—4.10	3.80	—0.24	3.56	1.07
1993	63.08	58.65	—4.43	4.10	—0.26	3.84	1.15
1994	68.12	63.34	—4.78	4.43	—0.28	4.15	1.24
1995	73.57	68.41	—5.16	4.78	—0.30	4.48	1.34
1996	79.46	73.88	—5.58	5.16	—0.32	4.84	1.45
1997	79.46	73.88	—5.58	5.16	—0.32	4.84	1.45
1998	79.46	73.88	—5.58	5.16	—0.32	4.84	1.45
1999	79.46	73.88	—5.58	5.16	—0.32	4.84	1.45
2000	79.46	73.88	—5.58	5.16	—0.32	4.84	1.45
2001	79.46	73.88	—5.58	5.16	—0.32	4.84	1.45
2002	79.46	73.88	—5.58	5.16	—0.32	4.84	1.45
2003	79.46	73.88	—5.58	5.16	—0.32	4.84	1.45
2004	79.46	73.88	—5.58	5.16	—0.32	4.84	1.45
2005	79.46	73.88	—5.58	5.16	—0.32	4.84	1.45
2006	79.46	73.88	—5.58	5.16	—0.32	4.84	1.45
2007	79.46	73.88	—5.58	5.16	—0.32	4.84	1.45
2008	79.46	73.88	—5.58	5.16	—0.32	4.84	1.45
2009	79.46	73.88	—5.58	5.16	—0.32	4.84	1.45
2010	79.46	73.88	—5.58	5.16	—0.32	4.84	1.45
Total				111.68	—6.95	104.65	31.36