

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

MINISTRY OF TRANSPORT AND COMMUNICATIONS,
THE GOVERNMENT OF THE ARAB REPUBLIC OF EGYPT

THE FEASIBILITY STUDY
ON
A BRIDGE OVER NORTHERN PART OF THE SUEZ CANAL

FINAL REPORT

APPENDIX

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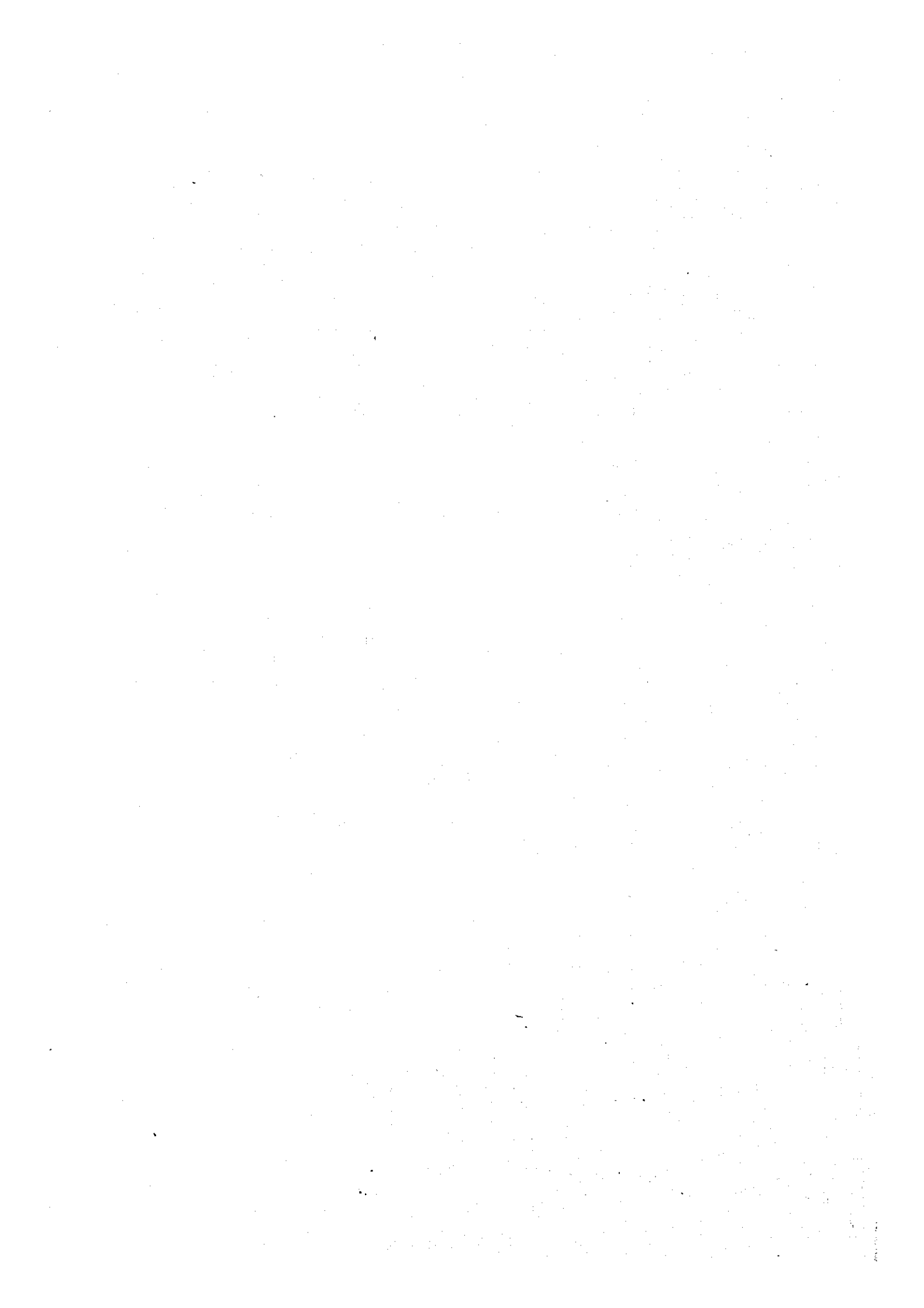
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THE FEASIBILITY STUDY

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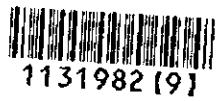
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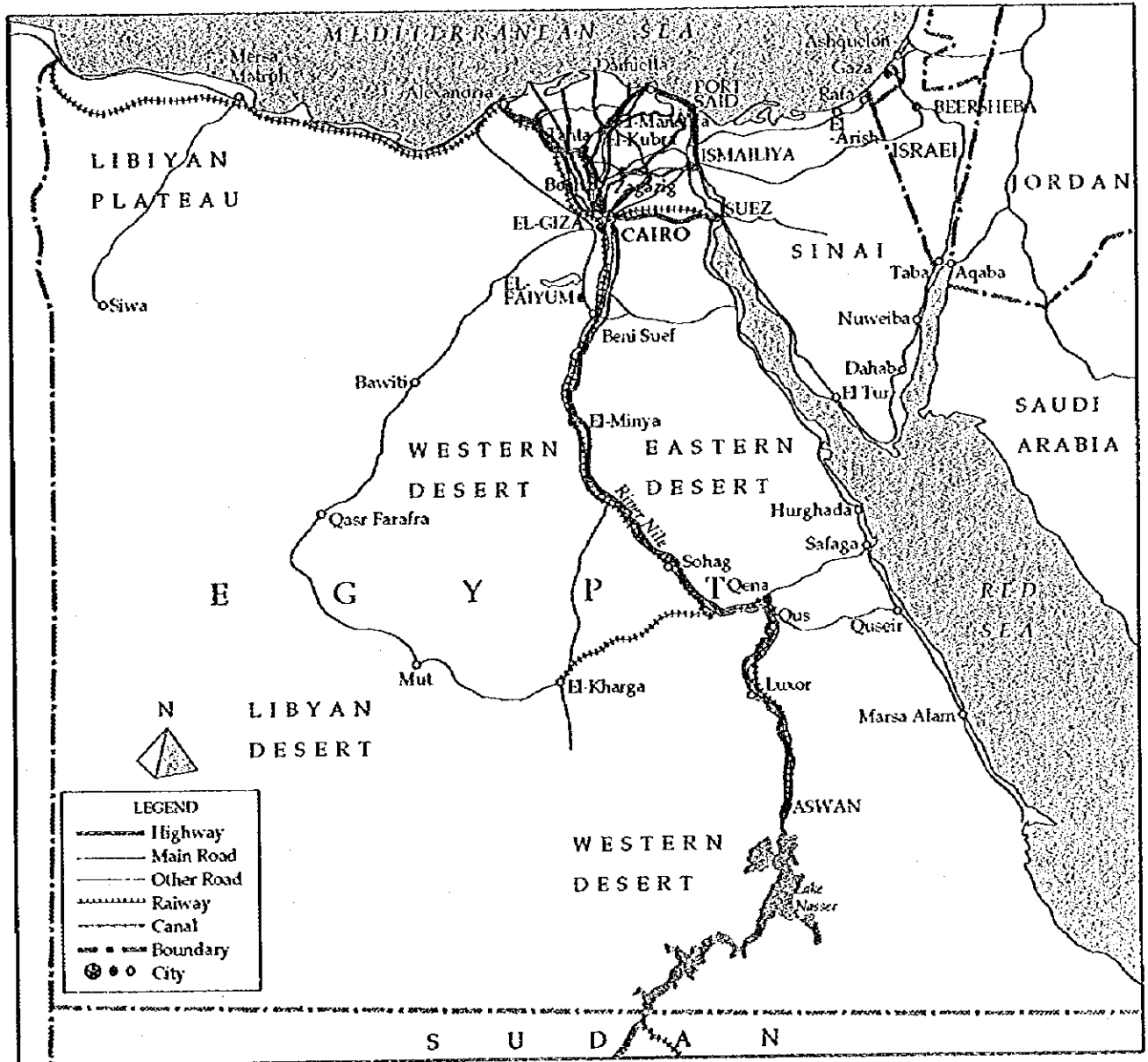
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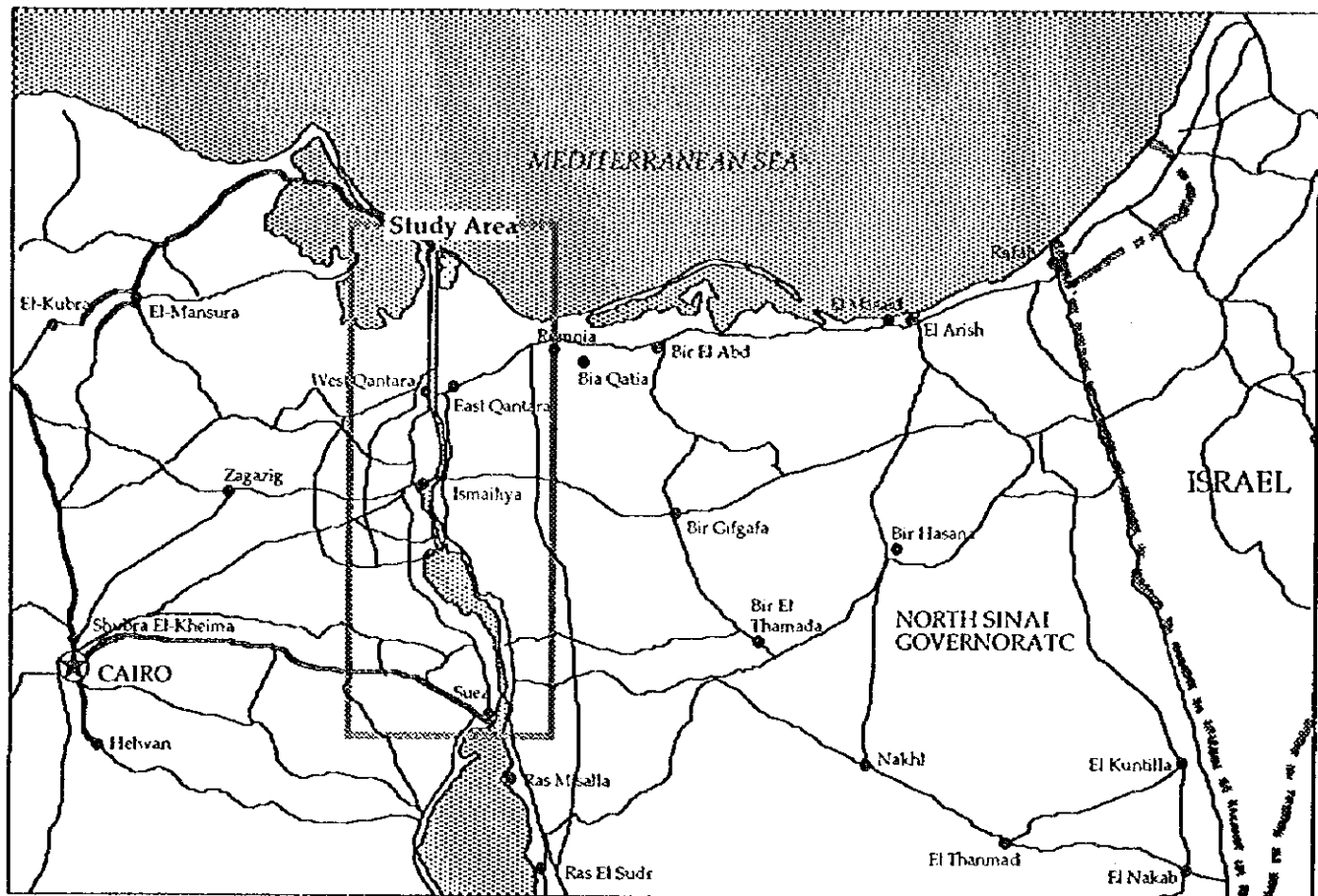
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The Feasibility Study on A Bridge over Northern Part of the Suez Canal

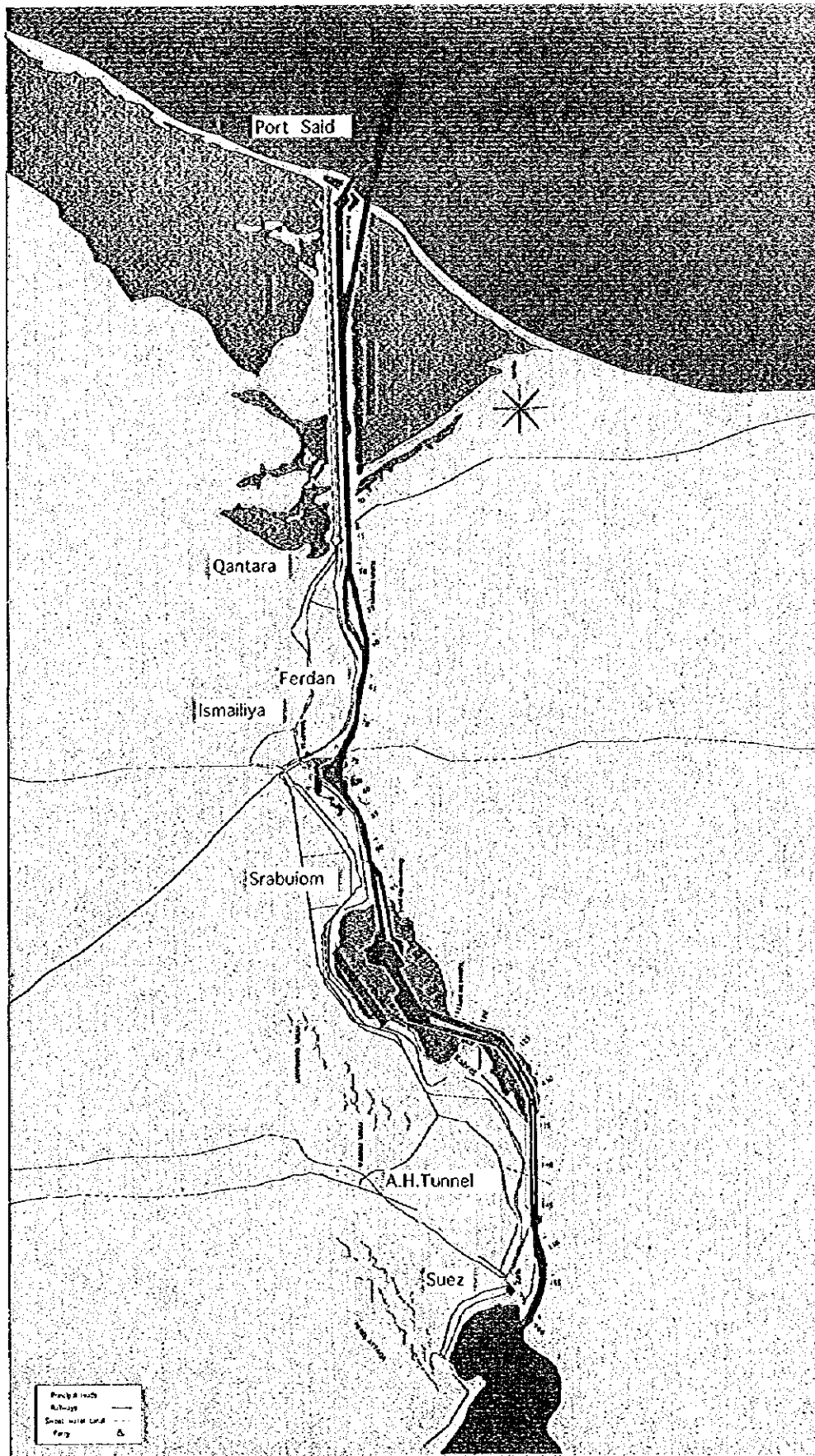


Location Map

The Feasibility Study on A Bridge over Northern Part of the Suez Canal



Location Map of Study Area (1)



Location Map of Study Area (2)

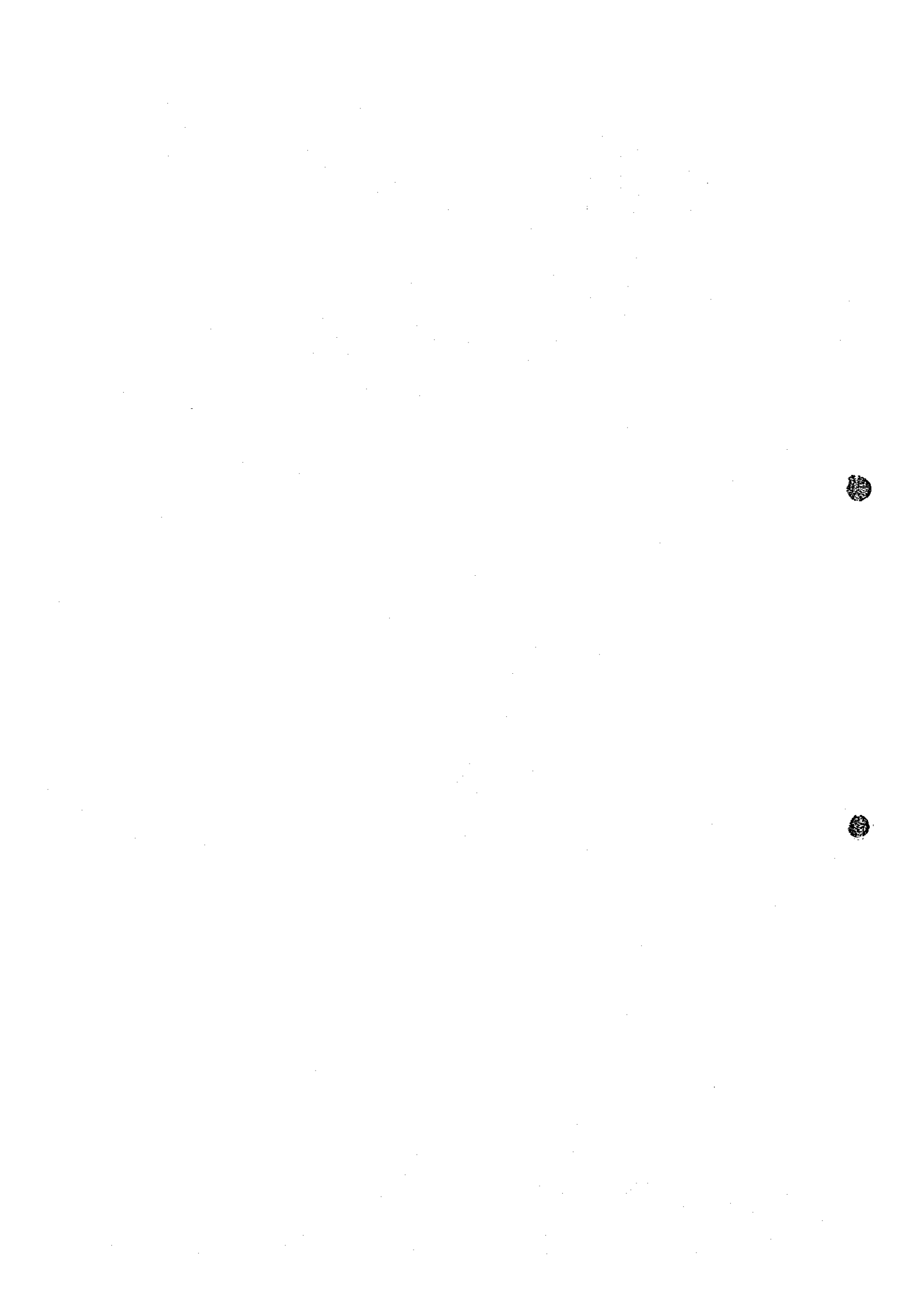


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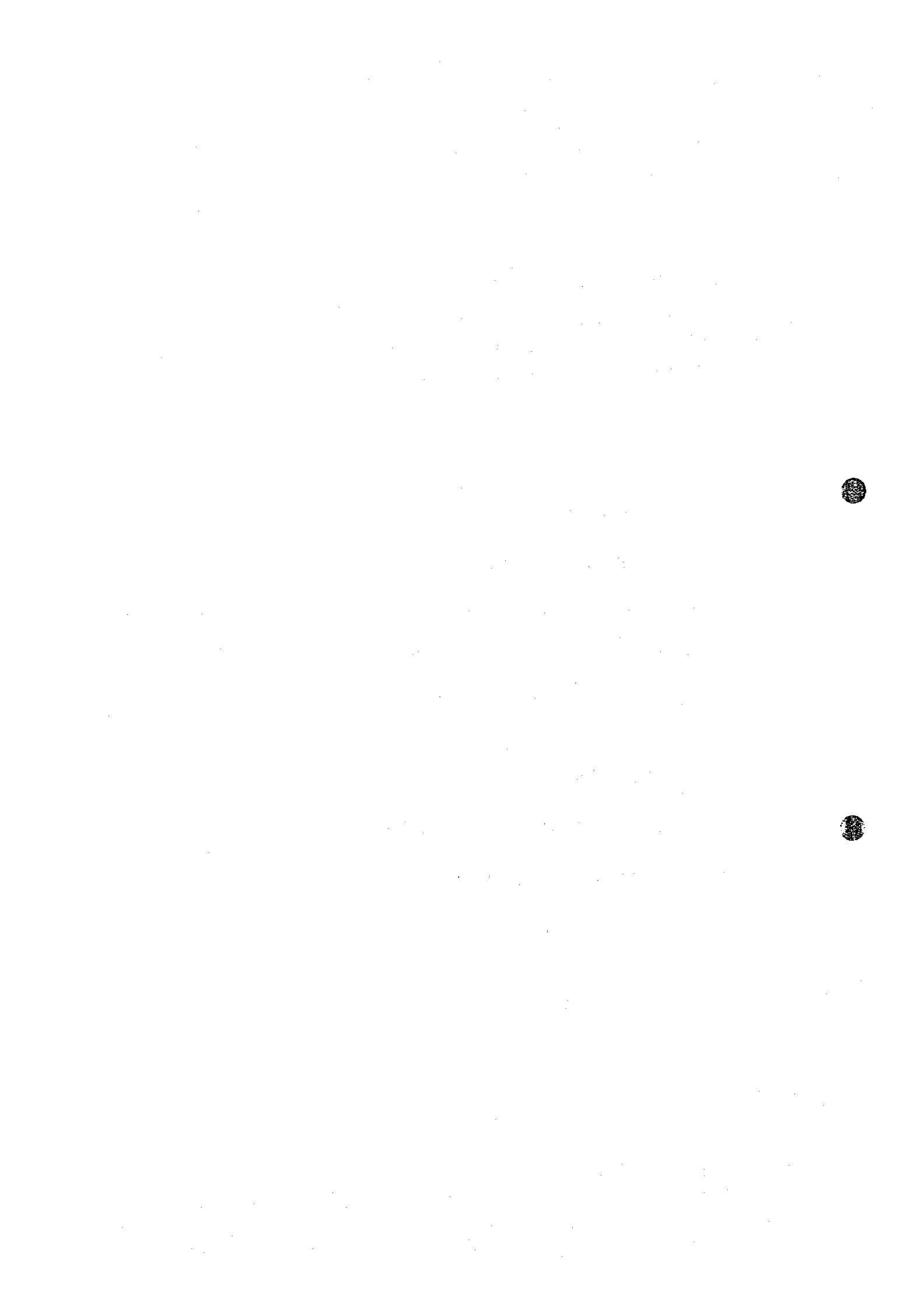
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Chapter 2 Socio-Economic Conditions

1970-1971



A 2.1 Egypt Population and Population Distribution on Governorate (1986-2020)

(1)

(unit : In thousand)

Region	Governorate	Historical Data			Base Year		Future Estimations	
		1986 (A)		1992 (B)	1994 (B)		1995 (B)	1996 (B)
		Population	%	Population	Population	%	Population	Population
Greater Cairo	Cairo	6,069	12.58	6,800	6,894	11.83	6,955	7,059
	Qalyubia	2,516	5.21	2,966	3,013	5.17	3,045	3,492
	Giza	3,725	7.72	4,287	4,457	7.65	4,525	5,297
	Sub Total	12,310	25.51	14,053	14,364	24.65	14,525	15,848
Alexandria	Alexandria	2,927	6.07	3,380	3,407	5.85	3,431	3,558
	Matruh (H)	161	0.33	200	183	0.31	186	192
	Beheira	3,249	6.73	3,842	3,935	6.75	3,973	4,079
Sub Total	6,337	13.13	7,422	7,525	12.91	7,590	7,829	
Delta	Kafr el Sheikh	1,809	3.75	2,110	2,236	3.84	2,266	2,230
	Gharbiya	2,885	5.98	3,323	3,405	5.84	3,437	3,494
	Miunufiya	2,221	4.60	2,604	2,644	4.54	2,672	2,755
	Damietta	741	1.53	858	888	1.52	898	908
	Daqahliya	3,484	7.22	4,045	4,181	7.18	4,226	4,259
Sub Total	11,140	23.08	12,940	13,354	22.92	13,499	13,646	
Suez Canal & Sinai	Sharqiya	3,414	7.08	4,013	4,166	7.15	4,220	4,258
	Port Said	401	0.83	460	463	0.79	467	563
	Ismailiya	545	1.13	652	672	1.15	681	773
	Suez	328	0.68	388	401	0.69	411	501
	North Sinai (G)	160	0.33	226	216	0.37	219	217
	South Sinai (G)	40	0.08	57	35	0.06	35	55
	Total of Sinai	200	0.41	283	251	0.43	254	272
Sub Total	4,888	10.13	5,796	5,953	10.21	6,033	6,367	
Total of Lower Egypt	34,675	71.85	40,211	41,196	70.69	41,647	43,690	
North Upper Egypt	El-Minya	2,645	5.49	3,087	3,323	5.71	3,372	3,260
	Beni Suef	1,449	3.00	1,704	1,809	3.10	1,836	1,804
	Faiyum	1,551	3.21	1,866	1,964	3.37	1,995	2,001
	Sub Total	5,645	11.70	6,657	7,096	12.18	7,203	7,065
Asyut	Asyut	2,216	4.59	2,606	2,799	4.81	2,843	2,763
	New Valley (H)	113	0.24	134	135	0.23	136	129
	Sub Total	2,329	4.83	2,740	2,934	5.04	2,979	2,892
South Upper Egypt	Sohag	2,447	5.07	2,836	3,021	5.19	3,067	2,988
	Red Sea (H)	90	0.19	118	113	0.19	115	114
	Qena (I)	2,259	4.68	2,677	2,886	4.95	2,925	2,841
	Aswan	809	1.68	953	1,026	1.76	1,042	1,013
Sub Total	5,605	11.62	6,584	7,046	12.09	7,149	6,956	
Total of Upper Egypt	13,579	28.15	15,981	17,076	29.31	17,331	16,913	
Total of Egypt	48,254	100.00	56,192	58,272	100.00	58,978	60,603	

(2)

(unit : In thousand)

Region	Governorate	Future Estimations According to Present Trends						
		1997 (F)	2001 (B)		2002 (F)	2005 (D,E)	2007 (F)	2010 (D,E)
		Population	Population	%	Population	Population	Population	Population
Greater Cairo	Cairo	7,230	7,912	11.65	8,050	8,463	8,733	9,139
	Qalyubia	3,576	3,914	5.76	3,982	4,187	4,320	4,521
	Giza	5,425	5,936	8.74	6,040	6,351	6,554	6,857
	Sub Total	16,231	17,762	26.15	18,072	19,001	19,607	20,517
Alexandria	Alexandria	3,644	3,988	5.87	4,057	4,266	4,402	4,606
	Matruh (H)	197	215	0.32	219	230	238	248
	Beheira	4,177	4,572	6.73	4,651	4,890	5,046	5,281
	Sub Total	8,018	8,775	12.92	8,927	9,386	9,686	10,135
Delta	Kafr el Sheikh	2,284	2,499	3.68	2,543	2,673	2,759	2,887
	Gharbiya	3,578	3,916	5.77	3,984	4,189	4,323	4,523
	Miunufiya	2,822	3,088	4.55	3,142	3,303	3,409	3,567
	Damietta	930	1,018	1.50	1,035	1,089	1,123	1,175
	Daqahliya	4,362	4,773	7.01	4,857	5,106	5,269	5,514
Sub Total	13,976	15,294	22.51	15,561	16,360	16,883	17,666	
Suez Canal & Sinai	Sharqiya	4,361	4,772	7.02	4,855	5,105	5,268	5,512
	Port Said	577	631	0.93	642	675	697	729
	Ismailiya	792	866	1.28	882	927	956	1,001
	Suez	513	562	0.83	571	601	620	649
	North Sinai (G)	222	243	0.36	247	260	268	281
	South Sinai (G)	56	62	0.09	63	66	68	71
	Total of Sinai	278	305	0.45	310	326	336	352
Sub Total	6,521	7,136	10.51	7,260	7,634	7,877	8,243	
Total of Lower Egypt		44,746	48,967	72.09	49,820	52,381	54,053	56,561
North Upper Egypt	El-Minya	3,339	3,654	5.38	3,717	3,908	4,033	4,220
	Beni Suef	1,848	2,022	2.98	2,057	2,163	2,232	2,336
	Faiyum	2,049	2,242	3.30	2,282	2,399	2,476	2,590
Sub Total	7,236	7,918	11.66	8,056	8,470	8,741	9,146	
Asyut	Asyut	2,830	3,097	4.56	3,151	3,313	3,418	3,577
	New Valley (H)	132	144	0.21	147	154	160	167
Sub Total	2,962	3,241	4.77	3,298	3,467	3,578	3,744	
South Upper Egypt	Sohag	3,060	3,349	4.93	3,407	3,582	3,697	3,868
	Red Sea (H)	117	128	0.19	130	137	141	148
	Qena (I)	2,910	3,184	4.69	3,240	3,406	3,515	3,678
	Aswan	1,037	1,135	1.67	1,155	1,215	1,253	1,311
Sub Total	7,124	7,796	11.48	7,932	8,340	8,606	9,005	
Total of Upper Egypt		17,322	18,955	27.91	19,286	20,277	20,925	21,895
Total of Egypt		62,068	67,922	100.00	69,106	72,658	74,978	78,456

(3)

(unit : In thousand)

Region	Governorate	Future Estimations According to Present Trends				Target of National Strategy		Target - Trend in 2017
		2012 (F)	2015 (D,E)	2017 (F)	2020 (D,E)	2017 (C)		
		Population	Population	Population	Population	Population	%	
Greater Cairo	Cairo	9,397	9,784	10,018	10,370	8,189	9.52	-1,829
	Qalyubia	4,648	4,840	4,956	5,130	3,368	3.92	-1,588
	Giza	7,051	7,342	7,518	7,781	5,623	6.54	-1,895
	Sub Total	21,096	21,966	22,492	23,281	17,180	19.98	-5,312
Alexandria	Alexandria	4,736	4,931	5,050	5,227	6,415	7.46	1,365
	Matruh (H)	256	266	272	282	1,444	1.68	1,172
	Beheira	5,430	5,654	5,789	5,992	5,262	6.12	-527
	Sub Total	10,422	10,851	11,111	11,501	13,121	15.26	2,010
Delta	Kafr el Sheikh	2,969	3,091	3,165	3,276	2,355	2.74	-810
	Gharbiya	4,651	4,843	4,959	5,133	4,046	4.70	-913
	Miunufiya	3,667	3,819	3,910	4,047	3,546	4.12	-364
	Damietta	1,209	1,258	1,289	1,334	1,477	1.72	188
	Daqahliya	5,669	5,903	6,044	6,256	4,603	5.35	-1,441
	Sub Total	18,165	18,914	19,367	20,046	16,027	18.63	-3,340
Suez Canal & Sinai	Sharqiya	5,668	5,902	6,043	6,255	6,847	7.96	804
	Port Said	749	780	799	827	942	1.10	143
	Isnailiya	1,029	1,072	1,097	1,135	1,293	1.50	196
	Suez	667	694	711	736	1,482	1.72	771
	North Sinai (G)	289	301	308	319	3,147	3.66	2,761
	South Sinai (G)	73	76	78	81			
	Total of Sinai	362	377	386	400	3,147	3.66	2,761
	Sub Total	8,475	8,825	9,036	9,353	13,711	15.94	4,675
	Total of Lower Egypt	58,158	60,556	62,006	64,181	60,039	69.81	-1,967
North Upper Egypt	El-Minya	4,340	4,519	4,627	4,789	4,583	5.33	-44
	Beni Suef	2,401	2,500	2,560	2,650	2,395	2.78	-165
	Faiyum	2,664	2,773	2,840	2,939	2,748	3.20	-92
	Sub Total	9,405	9,792	10,027	10,378	9,726	11.31	-301
Asyut	Asyut	3,678	3,830	3,921	4,059	3,646	4.24	-275
	New Valley (H)	172	179	183	189	913	1.06	730
	Sub Total	3,850	4,009	4,104	4,248	4,559	5.30	455
South Upper Egypt	Sohag	3,978	4,141	4,240	4,389	3,874	4.50	-366
	Red Sea (H)	152	158	162	168	641	0.75	479
	Qena (I)	3,782	3,938	4,032	4,173	4,216	4.90	184
	Aswan	1,348	1,404	1,438	1,488	2,954	3.43	1,516
	Sub Total	9,260	9,641	9,872	10,218	11,685	13.58	1,813
	Total of Upper Egypt	22,515	23,442	24,003	24,844	25,970	30.19	1,967
	Total of Egypt	80,673	83,998	86,009	89,025	86,009	100.00	0

Source : Regional/Infrastructure Planning, MOP

Note: (A): Census numbers

(B): Official estimations by Central Agency for Public Mobilization & Statistics

(C): Estimation by United Nations project for regional development & infrastructure

(D): Estimation of Egypt total population (2005-2020) -every 5 years- according to the following source : UN, world population prospects 1988, New York 1989, Table 2 pp78-79

(E): Distribution of population on governorates (2005-2020) -every 5 years- according to Central Organization for Public Mobilization & Statistics

(F): Total population & population distribution on governorates in the end of the 5-year plans (1997-2002-2007-2012) added by linear interpolation

(G): Sinai population according to the Census in 1986, the total population was divided between north and south sinai governorates at 4 to 1

(H): The population of borders governorates in July 1st 2001 estimated by Central Agency for Public Mobilization & Statistics. The total population was divided between the governorates according to the distribution type in 1992

(I): Population of Qena governorate including Luxor.

A 2.2 (1) Future Socio-Economic Framework (Case 1)

Zone Code	Zone Name	Population					Worker					GRDP (mil. LE)				
		1995	2002	2007	2017	2017	1995	2002	2007	2017	2017	1995	2002	2007	2017	
1	SINAI 1	204,895	540,100	745,000	1,068,700	51,634	138,600	195,500	293,100	435	1,385	2,176	4,763			
2	SINAI 2	17,474	27,900	36,200	58,900	4,403	7,300	9,700	16,400	37	72	106	262			
3	SINAI 3	6,202	23,500	35,600	54,600	1,563	6,000	9,500	15,000	13	60	104	243			
4	SINAI 4	19,219	125,000	182,000	337,100	6,533	33,300	53,400	102,200	55	322	532	1,502			
5	SINAI 5	5,560	120,000	163,000	258,500	1,957	38,900	54,600	89,100	16	309	476	1,152			
6	SINAI 6	15,724	143,700	181,400	279,400	5,805	44,500	57,400	89,300	49	370	530	1,245			
7	EPTS	0	84,500	134,000	195,000	0	21,100	34,800	53,300	0	217	391	869			
8	EISM	23,491	286,300	471,800	904,700	5,920	73,800	122,300	242,500	50	734	1,176	4,033			
9	ESUZ	0	29,500	41,100	52,800	0	7,100	10,300	13,900	0	76	120	235			
10	WPTS	467,000	631,000	737,000	941,000	136,800	196,200	254,300	355,700	1,663	2,575	3,724	7,229			
11	WISM	681,000	893,000	1,030,000	1,292,000	156,600	206,300	253,400	335,900	1,488	2,219	3,171	6,043			
12	WSUZ	411,000	766,000	1,011,000	1,481,000	98,200	178,500	251,700	392,500	1,213	2,459	4,035	9,050			
13	DAM/CLKW	1,969,600	2,229,700	2,374,700	2,644,100	508,600	656,200	785,200	973,000	4,913	7,246	10,245	19,879			
14	DKE	3,150,400	3,306,300	3,356,400	3,430,900	772,400	919,200	1,037,100	1,166,500	6,710	8,973	11,764	19,810			
15	SKN	1,395,800	1,706,600	1,899,900	2,264,700	328,200	430,100	513,000	652,200	2,397	3,599	5,033	9,349			
16	SKS/QAL	5,864,200	6,660,400	7,110,200	7,943,300	1,478,800	1,899,600	2,281,100	2,801,700	14,845	24,570	33,749	61,820			
17	CAJ/GJZ	11,472,000	12,466,000	12,947,200	13,801,000	3,042,200	3,839,600	4,622,100	5,575,600	35,024	62,234	85,330	156,574			
18	KAF/BHN	4,868,300	5,272,300	5,464,000	5,802,200	1,217,800	1,451,000	1,637,600	1,882,900	10,179	13,953	18,692	32,779			
19	GHR/MIF	7,470,700	8,249,700	8,656,100	9,394,800	1,817,000	2,265,300	2,642,100	3,145,500	16,071	22,672	30,870	55,800			
20	ALX	3,429,000	4,468,000	5,135,100	6,410,000	1,001,900	1,648,700	2,295,400	3,365,300	14,223	24,757	34,215	85,016			
21	FAY/BES	7,199,000	8,165,000	8,710,100	9,718,000	1,752,800	2,103,100	2,388,100	2,818,000	12,577	17,483	23,433	40,789			
22	WDA	186,000	598,000	886,000	1,443,000	45,400	147,100	229,500	392,500	387	1,461	2,716	6,874			
23	RED	115,000	288,000	408,000	641,000	29,600	74,900	116,700	199,400	359	1,031	1,879	4,848			
24	ASY	9,870,000	11,635,000	12,694,200	14,680,000	2,253,700	2,890,800	3,432,900	4,293,200	17,454	25,938	36,259	72,414			
25	NEW	136,000	391,000	568,000	912,000	30,500	86,000	130,100	216,100	206	677	1,198	2,810			
26	RAF															
27	ORG															
28	TAB															
29	MAT															
30	BER															
TOTAL		58,977,565	69,106,500	74,978,000	86,008,700	14,748,315	19,365,200	23,417,600	29,480,800	140,364	225,392	316,124	605,388			
Sinaï Total		292,565	1,380,500	1,990,100	3,209,700	77,815	372,600	547,300	914,800	655	3,545	5,811	14,304			
Mainland Total		58,685,000	67,726,000	72,987,900	82,799,000	14,670,500	18,992,600	22,870,300	28,566,000	139,709	221,847	310,313	591,084			

Note: GRDP : 1992 Fixed price

Source: Study Team Estimates based on NPDS data and NKTS data

A 2.2 (2) Future Socio-Economic Framework (Case 2)

Zone Code	Zone Name	Population				Worker				GRDP (mil. LE)			
		1995	2002	2007	2017	1995	2002	2007	2017	1995	2002	2007	2017
1	SINAI 1	204,895	368,300	508,000	811,700	51,634	95,000	131,900	220,400	435	946	1,482	3,617
2	SINAI 2	17,474	20,700	22,800	37,800	4,403	5,400	6,000	10,300	37	53	67	168
3	SINAI 3	6,202	14,500	20,200	37,000	1,563	3,700	5,200	9,900	13	37	59	165
4	SINAI 4	19,219	73,500	108,000	196,000	6,533	20,700	31,300	59,100	55	189	316	874
5	SINAI 5	5,560	69,000	112,200	176,000	1,957	22,300	37,500	60,200	16	178	328	784
6	SINAI 6	15,724	96,500	141,700	201,600	5,805	29,700	45,000	65,200	49	247	414	898
7	EPTS	0	56,500	93,400	158,100	0	14,300	24,100	42,600	0	145	273	704
8	EISM	23,491	139,200	227,000	392,700	5,920	35,700	58,900	106,500	50	357	662	1,751
9	ESUZ	0	17,100	23,900	49,200	0	4,100	5,800	12,900	0	44	70	219
10	WPTS	467,000	632,000	738,000	941,000	136,800	196,500	254,300	354,900	1,663	2,575	3,717	7,192
11	WTSM	681,000	895,000	1,032,000	1,292,000	156,600	206,600	233,600	335,100	1,488	2,220	3,168	6,012
12	WSUZ	411,000	768,000	1,012,000	1,481,000	98,200	178,900	251,700	391,600	1,213	2,461	4,027	9,003
13	DAM/DKW	1,969,600	2,242,000	2,392,000	2,569,000	508,600	659,400	789,500	978,800	4,913	7,269	10,274	19,903
14	DKE	3,150,400	3,338,000	3,401,000	3,504,000	772,400	927,700	1,049,700	1,188,700	6,710	9,045	11,884	20,128
15	SKN	1,395,800	1,711,000	1,902,000	2,265,000	328,200	431,100	512,900	650,800	2,397	3,602	5,022	9,302
16	SKN/QAL	5,864,200	6,698,000	7,159,000	8,015,000	1,478,800	1,910,200	2,295,500	2,824,100	14,845	24,698	33,950	62,306
17	CAU/GIZ	11,472,000	12,588,200	13,126,800	14,093,600	3,042,200	3,876,100	4,680,800	5,680,900	35,024	62,741	86,243	159,066
18	KAF/BRN	4,868,300	5,324,000	5,539,000	5,925,000	1,217,800	1,465,000	1,658,100	1,918,300	10,179	14,069	18,891	33,300
19	GHB/MIF	7,470,700	8,333,000	8,779,000	9,594,000	1,817,000	2,287,600	2,676,600	3,204,900	16,071	22,864	31,210	56,690
20	ALX	3,429,000	4,478,000	5,143,000	6,411,000	1,001,900	1,651,900	2,296,200	3,358,200	14,223	24,774	38,156	84,590
21	FAY/BES	7,199,000	8,250,000	8,835,000	9,923,000	1,752,800	2,124,400	2,419,400	2,871,000	12,577	17,637	23,696	41,436
22	WDA	186,000	599,000	886,000	1,443,000	45,400	147,400	229,200	391,600	387	1,461	2,708	6,839
23	RED	115,000	289,000	409,000	641,000	29,600	75,100	116,900	198,900	359	1,033	1,877	4,823
24	ASY	9,870,000	11,714,000	12,798,000	14,839,000	2,253,700	2,910,200	3,457,400	4,330,300	17,454	26,069	36,434	72,822
25	NEW	136,000	392,000	569,000	912,000	30,500	86,200	130,100	215,600	206	678	1,196	2,796
26	RAF												
27	ORG												
28	TAB												
29	MAT												
30	BER												
TOTAL		58,977,565	69,106,500	74,978,000	86,008,700	14,748,315	19,365,200	23,417,600	29,480,800	140,364	225,392	316,124	605,388
Sinai Total		292,565	855,300	1,257,200	2,060,100	77,815	230,900	345,700	587,100	655	2,196	3,671	9,180
Others Total		58,685,000	68,251,200	73,720,800	83,948,600	14,670,500	19,134,300	23,071,900	28,893,700	139,709	223,196	312,453	596,208

Source : Study Team Estimates based on NPDS data and NRTS data
Note : GRDP : 1992 fixed price

A 2.2 (3) Future Socio-Economic Framework (Revised Case 3)

Code	Zone Name	Population					Worker					GRDP (mil. LE)				
		1995	2002	2007	2017	2017	1995	2002	2007	2007	2017	1995	2002	2007	2017	
1	SINAI 1	204,895	286,200	401,900	613,100	51,634	72,400	103,700	165,000	435	735	1,173	2,732			
2	SINAI 2	17,474	19,200	22,200	30,500	4,403	4,900	5,700	8,300	37	49	65	136			
3	SINAI 3	6,202	10,100	16,100	30,800	1,563	2,500	4,100	8,100	13	26	47	137			
4	SINAI 4	19,219	41,300	67,700	130,200	6,533	12,100	20,000	40,300	55	107	198	580			
5	SINAI 5	5,560	62,600	92,800	170,700	1,957	20,800	31,600	59,600	16	160	271	761			
6	SINAI 6	15,724	74,400	114,100	166,200	5,805	24,000	36,900	55,200	49	191	334	740			
7	EPTS	0	34,300	57,900	108,100	0	8,300	14,300	28,300	0	88	169	482			
8	EISM	23,491	69,300	120,300	236,700	5,920	16,700	29,600	60,500	50	178	351	1,055			
9	ESUZ	0	10,600	19,500	35,400	0	2,500	4,800	9,000	0	27	57	158			
10	WPTS	467,000	634,300	741,400	947,000	136,800	197,100	255,400	356,800	1,663	2,583	3,730	7,220			
11	WTSM	681,000	898,200	1,036,800	1,306,300	156,600	207,400	254,700	337,000	1,488	2,227	3,178	6,036			
12	WSUZ	411,000	770,800	1,016,700	1,490,500	98,200	179,500	252,800	393,700	1,213	2,468	4,040	9,040			
13	DAM/DKW	1,969,600	2,250,500	2,403,200	2,686,200	508,600	661,900	792,800	984,100	4,913	7,289	10,306	19,986			
14	IDKE	3,150,400	3,349,800	3,417,000	3,526,400	772,400	930,900	1,054,100	1,195,000	6,710	9,070	11,923	20,208			
15	SKN	1,395,800	1,716,700	1,911,200	2,279,600	328,200	432,400	515,000	654,300	2,397	3,612	5,039	9,339			
16	SKS/QAL	5,864,200	6,722,700	7,192,300	8,066,400	1,478,800	1,917,100	2,304,800	2,839,200	14,845	24,771	34,059	62,556			
17	CAU/GHZ	11,472,000	12,633,500	13,187,400	14,183,600	3,042,200	3,889,400	4,699,900	5,710,800	35,024	62,918	86,518	159,703			
18	KAF/BHN	4,868,300	5,343,500	5,565,200	5,962,800	1,217,800	1,470,200	1,665,000	1,928,400	10,179	14,109	18,954	33,434			
19	GHB/MIF	7,470,700	8,363,000	8,819,900	9,655,800	1,817,000	2,295,600	2,687,600	3,222,100	16,071	22,926	31,310	56,920			
20	ALX	3,429,000	4,494,300	5,167,200	6,432,200	1,001,900	1,657,600	2,305,300	3,375,800	14,223	24,844	38,281	84,933			
21	FAY/BES	7,199,000	8,279,900	8,876,400	9,986,700	1,752,800	2,131,700	2,429,300	2,886,200	12,577	17,687	23,771	41,603			
22	WDA	186,000	601,200	890,100	1,452,300	45,400	147,800	230,100	393,700	387	1,465	2,715	6,867			
23	RED	115,000	290,000	410,900	645,100	29,600	75,400	117,300	199,900	359	1,036	1,884	4,842			
24	ASY	9,870,000	11,756,400	12,858,100	14,934,200	2,253,700	2,920,400	3,471,900	4,353,300	17,454	26,146	36,550	73,113			
25	NEW	136,000	393,400	571,700	917,900	30,500	86,600	130,700	216,800	206	680	1,201	2,807			
26	RAF															
27	ORG															
28	TAB															
29	MAT															
30	BER															
	TOTAL	58,977,565	69,106,200	74,978,000	86,008,700	14,748,315	19,365,200	23,417,600	29,480,800	140,364	225,392	316,124	605,388			
	Sinai Total	292,565	608,000	912,500	1,521,700	77,815	164,200	250,900	433,700	655	1,561	2,665	6,781			
	Others Total	58,685,000	68,498,200	74,065,500	84,487,000	14,670,500	19,201,000	23,166,700	29,047,100	139,709	223,831	313,459	598,607			

Note : GRDP : 1992 fixed price

Source : Study Team Estimates based on NPDS data and NRTS data

Chapter 3 Suez Canal Development Plan

1950-1951



A 3.1 World Economy and International Trade

Table 3.1.1 Loaded/Unloaded Tables

(1).Oil and oil products

Oil and oil-products		(unit; 1000tons)										
	loaded						unloaded					
	1990	1991	1992	1993	1994	AVER	1990	1991	1992	1993	1994	AVER
EUR	3743	3755	4910	7798	3983	4838	39210	42228	34912	23470	18427	31649
BALT	135	71	129	468	351	231	543	471	356	500	141	402
N-MED	1498	1004	770	745	313	866	11822	17441	23713	24888	21754	19924
E-MED	174	853	555	1378	1289	850	651	492	314	322	331	422
W-MED	2122	2527	2396	2315	1887	2249	2877	3071	5131	4838	5080	4199
BLAK	5346	4273	2267	1275	1004	2833	3338	1581	882	420	375	1319
AME	557	1588	606	804	116	734	7355	5251	5975	6064	4012	5731
RED	19127	16880	14902	9994	8149	13810	1092	524	275	1082	368	668
E-AFR	0	44	45	213	207	102	1847	1592	675	240	103	891
IND	2136	1254	774	1282	865	1262	4184	5569	3994	3201	1711	3732
GULF	42634	50267	54189	47055	38727	46574	1560	2952	2529	3292	798	2226
SE-ASI	875	632	443	1219	1301	894	889	276	432	4684	4354	2127
FE-ASI	522	492	613	278	286	438	2545	1294	1796	1475	1176	1657
AUS	203	60	44	32	416	151	714	126	10	0	68	184
Other.n	299	906	273	429	169	415	0	0	0	0	0	0
Other.s	269	271	354	757	345	399	1013	2009	2276	1566	710	1515
Total.n	65796	70535	71283	60502	50120	63647	65796	70535	71283	60502	50120	63647
Total.s	13844	14342	11987	15540	9288	13000	13844	14342	11987	15540	9288	13000

Southbound traffic is shown shaded.

Other.n ; Other regions for northbound. Other.s ; Other regions for southbound.

Total.n ; Total tonnage for northbound. Total.s ; Total tonnage for southbound.

(2).Starch

Transit volume of starch by region		(unit; 1000 tons)										
	loaded						unloaded					
	1990	1991	1992	1993	1994	AVER	1990	1991	1992	1993	1994	AVER
EUR	0	0	0	0	0	0	3873	3244	3137	2920	3004	3236
BALT	0	0	0	0	0	0	123	15	13	42	254	89
N-MED	0	0	0	0	0	0	454	628	394	502	231	442
E-MED	0	0	0	0	0	0	344	226	471	369	30	288
W-MED	0	0	0	0	0	0	751	1013	705	1313	909	938
BLAK	0	0	0	0	0	0	836	0	44	0	66	189
AME	0	0	0	0	0	0	5	0	53	0	10	14
RED	0	3	23	0	44	14	0	0	0	0	0	0
E-AFR	0	0	0	0	73	15	0	0	0	0	0	0
IND	112	35	10	40	13	42	0	0	0	0	0	0
GULF	0	0	0	0	229	46	0	0	0	0	0	0
SE-ASI	4609	2300	2475	4220	2909	3303	0	0	0	0	0	0
FE-ASI	1564	2766	2309	909	1196	1749	0	0	0	0	0	0
AUS	101	22	0	0	40	33	0	0	0	0	0	0
Other.n	0	0	0	0	0	0	0	0	0	23	0	5
Other.s	0	0	0	24	0	5	0	0	0	24	0	5
Total.n	6386	5126	4817	5169	4504	5200	6386	5126	4817	5169	4504	5200
Total.s	0	0	0	24	0	5	0	0	0	24	0	5

Southbound traffic is shown shaded.

Other.n ; Other regions for northbound. Other.s ; Other regions for southbound.

Total.n ; Total tonnage for northbound. Total.s ; Total tonnage for southbound.

(3).Cement

Transit volume of cement by region

(unit, 1000 tons)

	loaded						unloaded					
	1990	1991	1992	1993	1994	AVER	1990	1991	1992	1993	1994	AVER
EUR	121	139	327	472	254	263	0			0		0
BALT	153	0	0	227	0	76	0			0		0
N-MED	588	295	446	1046	772	629	0			0		0
E-MED	678	647	693	775	1793	917	0			0		0
W-MED	26	16	19	105	56	44	0			0		0
BLAK	711	427	926	980	1308	870	116			0		58
AME	551	202	259	233	0	249	0			0		0
RED	0			0		0	647	677	1357	2982	3010	1735
E-AFR	0			0		0	295	111	267	215	225	223
IND	0			0		0	460	232	0	89	78	172
GULF	0			0		0	172	45	210	313	686	285
SE-ASI	0			0		0	480	412	524	24	53	299
FE-ASI	0			0		0	703	227	312	213	148	321
AUS	116			0		58	71	0	0	2	0	15
Other.n	0	1	41	0	7	10	0	1	44	0	7	10
Other.s	0	0	0	0	17	3	0	22	0	0	0	4
Total.n	116	1	44	0	7	68	116	1	44	0	7	68
Totals	2828	1726	2670	3838	4200	3052	2828	1726	2670	3838	4200	3052

Southbound traffic is shown shaded.

Other.n ; Other regions for northbound Other.s ; Other regions for southbound.

Total.n ; Total tonnage for northbound. Total.s ; Total tonnage for southbound.

(4).Wood

Transit volume of wood by region

(unit, 1000 tons)

	loaded						unloaded					
	1990	1991	1992	1993	1994	AVER	1990	1991	1992	1993	1994	AVER
EUR	13	42	57	93		51	1148	1047	930	899	639	933
BALT	16	110	4	81		53	39	22	0	0	0	12
N-MED	49	11	53	121		59	694	488	571	173	126	410
E-MED	5	0	12	23		10	114	83	111	235	115	132
W-MED	3	0	21	21		11	196	92	158	60	24	106
BLAK	63	27	82	72		61	3	0	2	0	0	1
AME	127	34	132	70		91	7	0	6	9	4	5
RED	43	55	65	69	120	70	245	180	267	332		256
E-AFR	13	10	9	112	22	33	4	0	0	0		1
IND	46	0	11	18	47	24	1	0	0	25		7
GULF	49	0	18	0	2	14	15	9	75	32		33
SE-ASI	1966	1477	1310	1039	653	1289	0	0	14	0		4
FE-ASI	80	214	366	124	34	164	11	45	10	92		40
AUS	4	0	0	27	30	12	0	0	0	0		0
Other.n	0	0	0	0	0	0	0	24	1	13	0	8
Other.s	0	14	5	0	624	129	0	4	0	0	624	126
Total.n	2201	1756	1779	1389	908	1607	2201	1756	1779	1389	908	1607
Totals	276	238	366	481	624	464	276	238	366	481	624	465

Southbound traffic is shown shaded.

Other.n ; Other regions for northbound. Other.s ; Other regions for southbound.

Total.n ; Total tonnage for northbound. Total.s ; Total tonnage for southbound.

(5). Vegetable oil, Molasses and Lubricating oil

Transit volume of vegetable oil, molasses and lubricating oil by region (unit, 1000 tons)

	loaded						unloaded					
	1990	1991	1992	1993	1994	AVER	1990	1991	1992	1993	1994	AVER
EUR	42	108	105	92	0	69	3296	2392	2901	2577	4501	3133
BALT	3	0	0	0	0	1	47	23	55	90	0	43
N-MED	186	250	303	275	0	203	899	1012	918	749	611	838
E-MED	7	3	23	13	0	9	754	705	523	606	278	573
W-MED	21	6	37	36	0	20	453	354	599	575	0	396
BLAK	3	9	0	14	0	5	316	176	95	50	0	127
AME	21	12	0	16	0	10	193	226	165	141	62	157
RED	394	848	612	673	57	517	25	89	66	78	0	52
E-AFR	298	81	212	45	234	174	34	29	53	31	0	29
IND	1283	1023	1403	1300	1404	1283	51	92	130	86	0	72
GULF	95	99	65	139	336	147	101	132	183	53	0	94
SE-ASI	3359	2045	2247	2028	2817	2499	29	0	15	111	0	31
FE-ASI	366	781	733	606	162	530	43	46	21	77	0	37
AUS	163	18	0	0	0	36	0	0	0	0	0	0
Other.n	0	0	0	0	491	98	0	7	16	3	49	15
Other.s	114	93	26	27	607	173	114	93	26	37	607	175
Total.n	5958	4895	5272	4791	5501	5283	5958	4895	5272	4791	5501	5283
Total.s	397	481	494	473	607	490	397	481	494	473	607	490

Southbound traffic is shown shaded.

Other.n ; Other regions for northbound. Other.s ; Other regions for southbound.

Total.n ; Total tonnage for northbound. Total.s ; Total tonnage for southbound.

(6). Oil Seeds

Transit volume of oil seeds by region (unit, 1000 tons)

	loaded						unloaded					
	1990	1991	1992	1993	1994	AVER	1990	1991	1992	1993	1994	AVER
EUR	0	0	0	0	0	0	1096	1643	988	1080	1356	1233
BALT	0	0	0	0	0	0	14	19	69	74	0	35
N-MED	0	0	0	0	0	0	455	297	299	298	54	281
E-MED	0	0	0	0	0	0	171	12	98	156	0	87
W-MED	0	0	0	0	0	0	112	132	17	57	31	70
BLAK	0	0	0	0	0	0	0	51	8	17	0	15
AME	0	0	0	0	0	0	66	74	37	59	34	54
RED	172	154	58	158	31	115	0	0	0	0	0	0
E-AFR	6	11	1	0	0	4	0	0	0	0	0	0
IND	211	283	191	124	176	197	0	0	0	0	0	0
GULF	71	0	12	0	0	17	0	0	0	0	0	0
SE-ASI	1270	1111	558	778	1045	952	0	0	0	0	0	0
FE-ASI	119	669	695	628	124	447	0	0	0	0	0	0
AUS	65	0	1	53	0	24	0	0	0	0	0	0
Other.n	0	0	0	0	139	28	0	0	0	0	40	8
Other.s	0	0	0	0	0	0	0	0	0	0	0	0
Total.n	1914	2228	1516	1741	1515	1783	1914	2228	1516	1741	1515	1783
Total.s	0	0	0	0	0	0	0	0	0	0	0	0

Southbound traffic is shown shaded.

Other.n ; Other regions for northbound. Other.s ; Other regions for southbound.

Total.n ; Total tonnage for northbound. Total.s ; Total tonnage for southbound.

Average Tonnage of Major Cargo in the Past 5 years by Regions

(1)

1000tons

Region	Oil		Metal		Fertilizer		Cereals		Coal	
	Loaded	Unloaded	Loaded	Unloaded	Loaded	Unloaded	Loaded	Unloaded	Loaded	Unloaded
EUR	4838	31649	7282	523	2828	409	4013	608	38	3293
BALT	231	402	2073	101	524	80	116	59	101	167
N-MED	866	19924	1664	114	777	393	1495	200	7	2413
E-MED	850	422	4184	32	511	349	717	259	1	3061
W-MED	2249	4199	928	32	1476	46	700	161	0	759
BLAK	2833	1319	5930	137	6181	195	104	307	30	1291
AME	734	5731	897	8	1349	41	3409	19	265	502
RED	13810	668	43	1500	1292	628	323	6844	267	59
E-AFR	102	891	16	77	28	210	49	120	1524	0
IND	1262	3732	215	2048	24	4104	335	1058	82	126
GULF	46574	2226	122	1542	78	661	56	607	180	124
SE-ASI	894	2127	139	5546	10	2149	317	247	1603	8
FE-ASI	438	1657	198	12218	51	6834	285	1677	3283	119
AUS	151	184	97	69	44	129	140	15	4550	0
Other.n	415	0	205	88	12	26	144	38	0	5
Other.s	399	1515	42	1	1075	4	12	0	15	19
Total.n	63647	63647	1035	1035	1538	1538	1650	1650	11489	11489
Total.s	13000	13000	23000	23000	14720	14720	10568	10568	456	456
Total		76647		24035		16258		12217		11945
Share		0.2725		0.0855		0.0578		0.0434		0.0425

Southbound traffic is shown shaded.

Other.n ; Other regions for northbound. Other.s ; Other regions for southbound.

Total.n ; Total tonnage for northbound. Total.s ; Total tonnage for southbound.

(2)

1000tons

Region	Ore		Chemical		Machine		Food stuff		Container	Other 7 goods	
	Loaded	Unloaded	Loaded	Unloaded	Loaded	Unloaded	Loaded	Unloaded		Loaded	Unloaded
EUR	646	2308	1256	885	563	1039	1174	703		373	8534
BALT	240	281	70	19	28	114	188	25		119	180
N-MED	53	3460	770	506	137	405	258	542		879	1971
E-MED	108	688	125	622	42	300	96	177		934	1080
W-MED	23	343	1676	1255	62	264	143	290		73	1510
BLAK	101	1394	232	62	64	26	59	425		924	356
AME	48	380	219	436	169	18	387	27		331	230
RED	174	55	1013	522	84	478	121	1180		716	1991
E-AFR	292	8	62	57	4	5	220	19		225	253
IND	3072	39	63	2315	35	26	302	255		1546	249
GULF	134	427	2336	553	72	157	29	574		223	405
SE-ASI	573	346	344	706	115	94	490	86		8043	332
FE-ASI	1043	332	72	854	1848	254	846	340		2889	390
AUS	3570	1	3	37	4	5	196	3		128	15
Other.n	0	5	57	165	24	21	1	17		136	46
Other.s	5	17	837	141	9	55	201	49		310	310
Total.n	8859	8859	3950	3950	2186	2186	2067	2067	27025	13907	13907
Total.s	1225	1225	5185	5185	1074	1074	2505	2505	37864	3945	3945
Total		10084		9135		3260		4572	64889		17851
Share		0.0359		0.0325		0.0116		0.0163	0.2307		0.0635

Southbound traffic is shown shaded.

Other.n ; Other regions for northbound. Other.s ; Other regions for southbound.

Total.n ; Total tonnage for northbound. Total.s ; Total tonnage for southbound.

Table 3.1.2 Cargo Forecast

1. Future Goods Traffic

Future Goods Traffic		unit: 1000tons							
Year	1990	1991	1992	1993	1994	2002	2007	2017	2030
Dry cargo	45893	39845	37534	41323	42396	45717	48346	54119	62788
Oil	65796	70535	71283	60502	50120	74710	75578	110227	114125
Container	21368	22618	26382	29961	34796	43109	50244	66185	96458
Liquid bulk	5958	4895	5272	4791	5501	5776	6107	6826	7889
Others	16030	15327	12051	12450	10059	11881	11393	11313	8052
N. bound Total	155045	153220	152522	149027	142872	181194	191668	248670	289312
Dry cargo	51149	52233	59056	73941	74553	79974	86476	101309	124951
Oil	13844	14342	11987	15540	9288	14995	16393	19595	24710
Container	30325	32928	36514	42729	46826	60893	70971	93489	136250
Liquid bulk	397	481	494	473	607	566	618	739	932
Others	21121	19338	14454	15204	15809	14670	13905	13630	8796
S. bound Total	116836	119322	122505	147887	147083	171098	188364	228762	295639
Total									
Dry cargo total	97042	92078	96590	115264	116949	125691	134822	155428	187738
Oil total	79640	84877	83270	76042	59408	89705	91972	129822	138835
Container total	51693	55546	62896	72690	81622	104003	121215	159674	232708
Liquid bulk total	6355	5376	5766	5264	6108	6341	6725	7565	8822
Others total	37151	34665	26505	27654	25868	26552	25298	24944	16849
Bothbound total	271881	272542	275027	296914	289955	352292	380032	477432	584951
Nonoil Total	192241	187665	191757	220872	230547	262587	288061	347610	446116

Liquid bulk cargo includes vegetable oil, molasses and lubricating oil.

2. Basic data

(1) GDP growth rate and GDP per capita growth rate (%)

GDP per capita						
	1990	1991	1992	1993	1994	Ave.
Europe	2.30	0.60	0.70	-0.50	2.50	1.12
Asia	4.00	4.70	6.50	7.10	7.00	5.86
Eu.gdp	3.00	1.10	1.00	-0.40	2.80	1.50

GDP per capita						
	1990	1991	1992	1993	1994	Ave.
Industria	1.6		0.8	0.6	2.4	1.35
Develop.	2.2	3.1	3.6	4.3	4.3	3.5

GDP growth (per cent)						
	1990	1991	1992	1993	1994	Ave.
Industrial	2.4	0.8	1.5	1.2	3.0	1.78

GDP growth %						
	1990	1991	1992	1993	1994	Ave.
Middle	4.8	3.1	5.5	3.7	0.7	3.56

(2) Population growth

Population forecast (mil.)

	1993	2000	2025	'93/'00	'00/'25
Viet Nam	71	83	118	2.26%	1.42%
India	898	1022	1392	1.86%	1.24%
Thai	58	62	74	0.96%	0.71%
China	1178	1255	1471	0.91%	0.64%
Total	2205	2422	3055	1.35%	0.93%

Population mil.

	1993	2000	2025	'93/'00	'00/'25
France	57	59	61	0.49%	0.13%
UK	58	59	61	0.24%	0.13%
Sweden	9	9	10	0.00%	0.42%
Total	124	127	132	0.34%	0.155%

Population forecast (mil.)

	1993	2000	2025	93/00	00/25
Saudi	17	21	43	3.06%	2.91%
Jordan	4	5	9	3.24%	2.38%
Ethiopia	52	64	127	3.01%	2.78%
Tanzani	28	34	63	2.81%	2.50%
Kenya	25	30	46	2.64%	1.72%
Total	126	154	288	2.91%	2.54%

(3) Chemical Products Transportation

Chemical Products Traffic (billion ton*km)

	1970	1980	1990	1991	1992	1993	Aver.
Traffic	890	1020	1560	1530	1620	1775	3.05%

(4) World Energy

World Energy unit: Oil Equiv. Mil.tons

	1986	1993	2000	2002	2007	2010	2017	2030	'00/'10
Oil	2261	2791	3065	3190	3522	3739	4296	6782	2.005%
Coal	1111	1765	2003	2104	2377	2558	3035	5326	2.475%
N-Gas	910	1200	1305	1385	1610	1762	2175	4341	3.051%
N-clear	327	488	535	547	560	599	649	844	1.147%
Water	417	173	221	233	265	286	343	622	2.619%
Total	5025	6417	7129	7458	8334	8944	10498	17913	2.294%

Consumption million barrel per day

	1986	1993	2000	2002	2007	2010	2017	2030	00/10
N-Ame	18.1	19.2	20.5	20.9	21.9	22.6	24.1	24.8	0.953%
Europe	12.5	13.6	14.6	15.0	15.8	16.3	17.5	18.1	1.067%

A3.2 Canal Traffic

Table 3.2.1 Details of Traffic Forecast

(I) Total Number of Vessels and Total SCNT

	1990	1991	1992	1993	1994	2002	2007	2017	2030
Total Number	17664	18326	16629	17317	16370	18363	19280	22189	25222
Total SCNT*	410322	426449	369779	396550	364487	444102	478084	577874	705573
No. of ships in ballast	2676	3280	2406	2716	2386	2665	2709	2956	3079
Total SCNT*(in ballast)	125466	129840	84554	104254	77489	104501	110168	124657	142009
Ave. SCNT (Laden)	19006	19713	20054	20019	20523	21633	22202	23565	25451
Ave. SCNT (in ballast)	46886	39585	35143	38385	32477	39212	40667	42171	46122
North-B Ship Laden	7179	7331	6779	6546	6291	7422	7791	9225	10470
SCNT*(Laden)	156301	166167	158160	153307	147977	181380	194108	243157	292796
SCNT per vessel	21772	22666	23331	23420	23522	24438	24914	26358	27965
Cargo volume per vessel						14347	14901	15007	16732
South-B Ship Laden	7809	7715	7444	8055	7693	8276	8780	10008	11673
SCNT*(Laden)	128555	130442	127065	138989	139021	158221	173808	210060	270768
SCNT per vessel	16462	16908	17069	17255	18071	19118	19796	20989	23196
Cargo volume per vessel						18862	19587	20900	23210
North-B Ship in ballast	1155	1472	1157	1414	1363	1330	1374	1608	1745
SCNT*(in Ballast)	14161	15253	11090	14990	12220	13010	13457	16569	17984
SCNT per vessel	12261	10362	9585	10601	8966	9782	9794	10304	10306
South-B Ship in ballast	1521	1808	1249	1302	1023	1335	1335	1348	1334
SCNT*(in Ballast)	111305	114587	73464	89264	65269	91491	96711	108088	124025
SCNT per vessel	73179	63378	58818	68559	63802	68533	72443	80184	92972

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Total Number of Non-tankers						Number
	1993	1994	2002	2007	2017	2030
North bound	6475	6339	7035	7465	8457	9888
South bound	7649	7301	7875	8390	9658	11356
Total	14124	13640	14910	15855	18115	21244

Total Number of Tankers						Number
	1993	1994	2002	2007	2017	2030
North bound	1485	1315	1717	1700	2376	2327
South bound	1708	1415	1736	1725	1698	1651
Total	3193	2730	3453	3425	4074	3978

Total Number of Vessels						Number
	1993	1994	2002	2007	2017	2030
North bound	7960	7654	8752	9165	10833	12215
South bound	9357	8716	9611	10115	11356	13007
Total	17317	16370	18363	19280	22189	25222

(2). Number of Non Tankers

	1990	1991	1992	1993	1994	2002	2007	2017	2030
Total Number	13982	14777	13476	14124	13640	14910	15855	18115	21244
Total SCNT*	251667	269640	251625	258671	257286	299312	327328	392458	501299
No. of ships in ballast	1208	1863	1258	1509	1469	1421	1474	1623	1780
Total SCNT*(in ballast)	20326	28986	18856	18539	14617	18981	19687	21351	23310
Ave. SCNT (Laden)	18110	18635	19051	19035	19938	20782	21392	22502	24558
Ave. SCNT (in ballast)	16826	15559	14989	12286	9950	13357	13356	13155	13096
North-B Ship Laden	5783	6000	5496	5294	5176	5992	6375	7246	8532
SCNT*(Laden)	114890	122603	116587	113506	114228	135545	148108	177117	225825
SCNT per vessel	19867	20434	21213	21440	22069	22621	23233	24443	26468
Cargo volume per vessel						17771	18210	19106	20533
South-B Ship Laden	6991	6914	6722	7321	6995	7497	8006	9246	10932
SCNT*(Laden)	116351	118051	116182	126626	128441	144786	159533	193990	252164
SCNT per vessel	16643	17074	17284	17296	18362	19313	19927	20981	23067
Cargo volume per vessel						20822	21480	22622	24783
North-B Ship in ballast	871	1164	896	1181	1163	1043	1090	1211	1356
SCNT*(in Ballast)	10214	11381	7944	11252	9649	8805	9385	10514	11840
SCNT per vessel	11727	9777	8866	9528	8297	8442	8610	8682	8732
South-B Ship in ballast	337	699	362	328	306	378	384	412	424
SCNT*(in Ballast)	10212	17605	10912	7287	4968	10176	10302	10837	11470
SCNT per vessel	30303	25186	30144	22216	16235	26921	26828	26303	27052

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	Total Number of Non-tankers					
	1993	1994	2002	2007	2017	2030
North bound	6475	6339	7035	7465	8457	9888
South bound	7649	7301	7875	8390	9658	11356
Total	14124	13640	14910	15855	18115	21244

(3). Number of Tankers

	1987	1988	1989	1990	1991	1992	1993	1994	Ave.&Total
Total No.	3402	3429	3424	3682	3549	3153	3193	2730	3320
No. of N-bound	1629	1623	1609	1678	1639	1544	1485	1315	1565
No. laden	1355	1181	1340	1394	1331	1283	1252	1115	10251
000 DWT laden	83472	66454	71434	78033	82479	78135	74507	63090	597604
DWT Per vessel	61603	56269	53309	55978	61968	60900	59510	56583	58297
Traffic volume 000t	75794	57080	58377	65796	70535	71283	60502	50120	509487
ton per vessel	55937	48332	43565	47199	52994	55560	48324	44951	49701
Load factor	0.908	0.859	0.817	0.843	0.855	0.912	0.812	0.794	0.853
No. in ballast	274	442	269	284	308	261	233	200	2271
000 DWT in ballast	7478	11244	7170	7814	6875	5722	6919	4544	57766
DWT Per vessel	27292	25439	26654	27514	22321	21923	29695	22720	25436
No. of S-bound	1773	1806	1815	2004	1910	1609	1708	1415	1755
No. laden	743	914	815	851	801	722	734	698	6278
000 DWT laden	18800	25366	22292	32246	23058	20079	22636	19400	183877
DWT Per vessel	25303	27753	27352	37892	28787	27810	30839	27794	29289
Traffic volume 000t	12246	15850	13909	13844	14342	11987	15540	9288	107006
ton per vessel	16482	17341	17066	16268	17905	16602	21172	13307	17045
Load factor	0.651	0.625	0.624	0.429	0.622	0.597	0.687	0.479	0.582
No. in ballast	1030	892	1000	1153	1109	887	974	717	7762
000 DWT in ballast	139456	146155	165019	198980	196493	124817	163167	117844	1251931
DWT Per vessel	135394	163851	165019	172576	177180	140718	167523	164357	161290

Results

Number

	2002	2007	2017	2030
Total No.	3453	3425	4074	3978
No. N-bound	1717	1700	2376	2327
No. laden	1430	1416	1979	1938
000 dwt laden	86186	86497	124183	125935
dwt Per vessel	60270	61086	62750	64982
Traffic volume 000t	74710	75578	110227	114125
ton per vessel	52245	53374	55698	58888
Load factor	0.867	0.874	0.888	0.906
No. in ballast	287	284	397	389
000 dwt in ballast	7303	7226	10102	9898
dwt Per vessel	25445	25445	25445	25445
No. S-bound	1736	1725	1698	1651
No. laden	779	774	762	741
000 dwt laden	24104	25610	28833	33379
dwt Per vessel	30942	33088	37838	45046
Traffic volume 000t	14995	16393	19595	24710
ton per vessel	19248	21180	25715	33347
Load factor	0.622	0.640	0.680	0.740
No. in ballast	957	951	936	910
000 dwt in ballast	153912	152947	150534	146353
dwt Per vessel	160827	160827	160827	160827

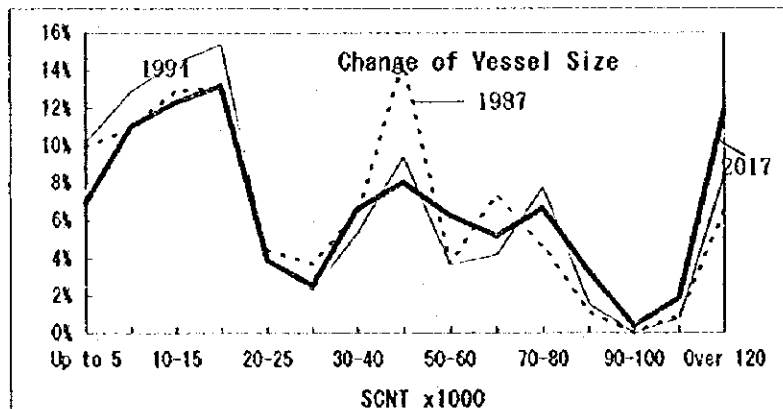
(4). SCNT and Other Data of Tankers

	1990	1991	1992	1993	1994	2002	2007	2017	2030
Total Number	3682	3549	3153	3193	2730	3453	3425	4074	3978
Total SCNT*	158655	156809	118154	137879	107201	144790	150756	185416	204274
No. of ships in ballast	1468	1417	1148	1207	917	1244	1235	1333	1299
Total SCNT*(in ballast)	105040	100854	65698	85715	62872	85520	90481	103306	118699
Ave. NT (Laden)	24216	26245	26163	26266	24451	26831	27523	29956	31943
Ave. NT (in ballast)	71553	71174	57228	71015	68563	68746	73264	77499	91377
North-B Ship Laden	1396	1331	1283	1252	1115	1430	1416	1979	1938
SCNT*(Laden)	41411	43564	41573	39801	33749	45835	46000	66040	66971
SCNT per vessel	29664	32730	32403	31790	30268	32053	32486	33371	34557
Cargo volume per vessel						52245	53374	55698	58888
South-B Ship Laden	818	801	722	734	698	779	774	762	741
SCNT*(Laden)	12204	12391	10883	12363	10580	13435	14275	16070	18604
SCNT per vessel	14919	15469	15073	16843	15158	17247	18443	21090	25106
Cargo volume per vessel						19248	21180	25715	33347
North-B Ship in ballast	284	308	261	233	200	287	284	397	389
SCNT*(in Ballast)	3947	3872	3146	3738	2571	4205	4072	6055	6144
SCNT per vessel	13898	12571	12054	16043	17130	14651	14339	15253	15795
South-B Ship in ballast	1184	1109	887	974	717	957	951	936	910
SCNT*(in Ballast)	101093	96982	62552	81977	60301	81315	86409	97251	112555
SCNT per vessel	85383	87450	70521	84165	54109	84969	90861	103900	123687

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Number of Tankers

	1993	1994	2002	2007	2017	2030
North bound	1485	1315	1717	1700	2376	2327
South bound	1708	1415	1736	1725	1698	1651
Total	3193	2730	3453	3425	4074	3978



Data

Five Years Ave. SCNT	North	31371
	South	15493
Increase Rate	North	0.0027
	South	0.0135

Contracted Tankers Build Plan

	1994	1995	1996	1997	Average
No.	71	62	33	7	173
1000dwt	10930	10590	4490	590	26600
Avedwt	153944	170806	136061	84286	153757

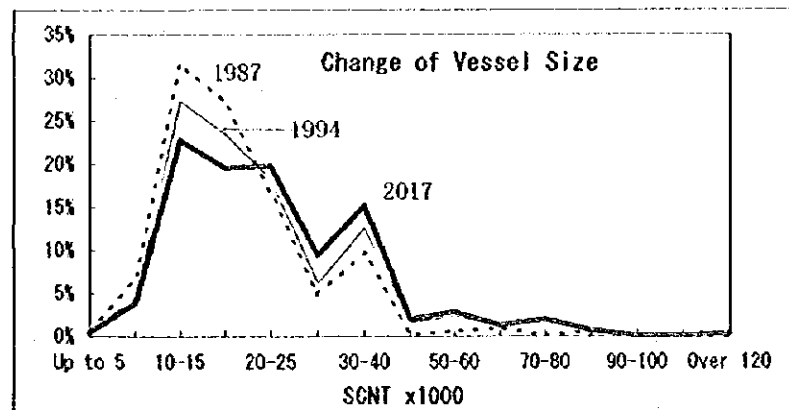
(5). SCNT and Other Data of Bulk Carriers

	1990	1991	1992	1993	1994	2002	2007	2017	2030
Total Number	3213	3141	3136	3553	3377	3375	3500	3797	4175
Total SCNT*	72991	70996	71844	76680	76500	78174	82969	94275	110106
No. of ships in ballast	234	313	323	428	370	318	328	352	379
Total SCNT*(in ballast)	8212	9727	9486	9667	8372	9347	9720	10553	11575
Ave. NT (Laden)	21745	21665	22168	21444	22656	22515	23092	24302	25957
Ave. NT (in ballast)	35094	31077	29368	22586	22627	29393	29634	29980	30541
North-B Ship Laden	1338	1184	1135	1097	1054	1013	1037	1099	1157
SCNT*(Laden)	33085	29232	29471	27598	27457	26612	27879	30943	34591
SCNT per vessel	24727	24689	25966	25158	26050	26271	26885	28155	29897
Cargo volume forecast*						40053	41948	46557	52055
South-B Ship Laden	1641	1644	1678	2028	1953	2044	2135	2346	2639
SCNT*(Laden)	31694	32037	32887	39415	40671	42215	45370	52779	63940
SCNT per vessel	19314	19487	19599	19435	20825	20653	21250	22497	24229
Cargo volume forecast*						71507	76851	89411	108313
North-B Ship in ballast	125	201	220	358	315	213	218	231	243
SCNT*(in Ballast)	2644	4029	3886	6322	5396	3731	3905	4231	4551
SCNT per vessel	21152	20045	17664	17659	17130	17517	17912	18317	18730
South-B Ship in ballast	109	112	103	70	55	105	110	121	136
SCNT*(in Ballast)	5568	5698	5600	3345	2976	5616	5815	6322	7024
SCNT per vessel	51083	50875	54369	47786	54109	53482	52862	52250	51644

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Number of Bulk Carriers

	1993	1994	2002	2007	2017	2030
North bound	1455	1369	1226	1255	1330	1400
South bound	2098	2008	2149	2245	2467	2775
Total	3553	3377	3375	3500	3797	4175



Data

Five Years Ave. SCNT	North	25318
	South	19732
Increase Rate	North	0.0046
	South	0.0057

Actual Bulk Ship Build

	1989	1990	1991	1992	Increase
No.	210	93	148	126	
1000dwt	11590	3640	11836	7261	
Avedwt	55.19	39.14	79.973	57.627	0.0145

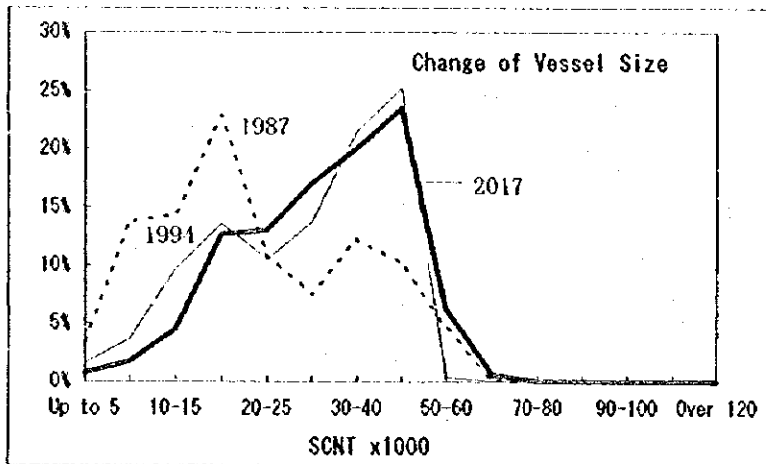
(6). SCNT and Other Data of Container Carriers

	1990	1991	1992	1993	1994	2002	2007	2017	2030
Total Number	3077	3175	3482	3656	3713	4678	5200	6277	8149
Total SCNT*	81706	87630	93152	100913	108217	136561	157497	204655	292418
No. of ships in ballast	73	84	42	36	20	72	80	97	125
Total SCNT*(in ballast)	978	1208	463	422	236	896	993	1205	1550
Ave. NT (Laden)	26874	27959	26944	27760	29239	29454	30567	32921	36250
Ave. NT (in ballast)	13397	14381	11024	11722	11800	12444	12413	12423	12400
North-B Ship Laden	1469	1546	1700	1797	1848	2260	2492	2975	3800
SCNT*(Laden)	39666	43023	46029	50359	54350	66980	76753	98957	139695
SCNT per vessel	27002	27829	27076	28024	29410	29637	30800	33263	36762
Cargo volume forecast*						49049	56199	72446	102297
South-B Ship Laden	1535	1545	1740	1823	1845	2346	2628	3205	4224
SCNT*(Laden)	41062	43399	46660	50132	53631	68685	79751	104493	151173
SCNT per vessel	26750	28090	26816	27500	29068	29278	30347	32603	35789
Cargo volume forecast*						62920	73036	95720	138476
North-B Ship in ballast	59	46	25	20	16	47	52	62	79
SCNT*(in Ballast)	822	534	299	214	174	522	589	718	933
SCNT per vessel	13932	11609	11960	10700	10875	11103	11335	11573	11815
South-B Ship in ballast	14	38	17	16	4	25	28	35	46
SCNT*(in Ballast)	156	674	164	208	62	374	404	487	617
SCNT per vessel	11143	17737	9647	13000	15500	14947	14415	13901	13405

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Number of Container Carriers

	1993	1994	2002	2007	2017	2030
North bound	1817	1864	2307	2544	3037	3879
South bound	1839	1849	2371	2656	3240	4270
Total	3656	3713	4678	5200	6277	8149



Data

Five Years Ave. SCNT	North	27868
	South	27645
Increase Rate	North	0.0077
	South	0.0072

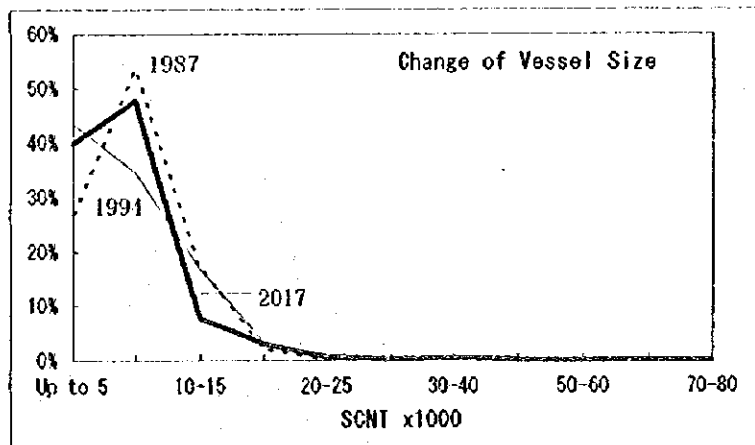
(7). SCNT and Other Data of General Cargo Carriers

	1990	1991	1992	1993	1994	2002	2007	2017	2030
Total Number	4444	4631	4104	4335	4192	4115	4436	5273	6349
Total SCNT*	35265	35937	30971	31044	28255	28693	30178	33998	38185
No. of ships in ballast	391	598	442	599	675	524	564	664	801
Total SCNT*(in ballast)	2219	3435	2113	2710	2530	2090	2412	3044	3939
Ave. NT (Laden)	8153	8059	7880	7584	7314	7408	7171	6716	6173
Ave. NT (in ballast)	5675	5744	4781	4524	3748	3989	4277	4584	4918
North-B Ship Laden	1737	1714	1524	1391	1326	1487	1602	1880	2270
SCNT*(Laden)	14536	14721	12744	11248	10507	11648	12133	13313	14729
Per vessel	8368	8589	8362	8086	7924	7833	7574	7081	6488
Cargo volume forecast*						9388	9778	10733	11870
South-B Ship Laden	2316	2319	2138	2345	2191	2104	2270	2729	3278
SCNT*(Laden)	18410	17781	16114	17086	15218	14955	15633	17641	19517
Per vessel	7949	7668	7537	7286	6946	7108	6887	6464	5954
Cargo volume forecast*						13917	14548	16416	18160
North-B Ship in ballast	344	497	410	565	636	477	514	604	729
SCNT*(in Ballast)	2088	2668	1947	2541	2412	1928	2215	2774	3569
SCNT per vessel	6069.8	5368	4749	4497	3792	4042	4309	4593	4895
South-B Ship in ballast	47	101	32	34	39	47	50	60	72
SCNT*(in Ballast)	231	767	166	169	118	162	197	270	370
SCNT per vessel	4915	7594	5188	4971	3026	3454	3943	4501	5139

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Number of General Cargo Carriers

	1993	1994	2002	2007	2017	2030
North bound	1956	1962	1964	2116	2484	2999
South bound	2379	2230	2151	2320	2789	3350
Total	4335	4192	4115	4436	5273	6349



Data

Five Years Ave. SCNT	North	8266
	South	7477
Increase Rate	North	-0.0067
	South	-0.0063

Actual Ship Build of General Cargo Carrier

	1989	1990	1991	1992	Increase Rate
No.	327	310	167	225	
1000dwt	2077	2090	877	1402	
Avedwt	6.3517	6.7419	5.2515	6.2311	-0.0064

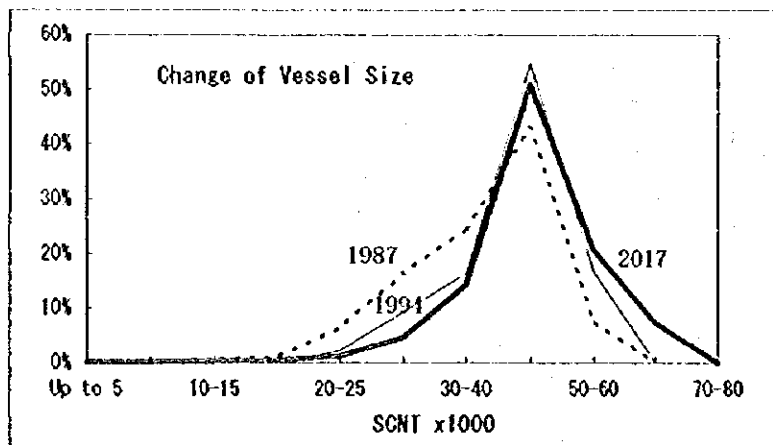
(8). SCNT and Other Data of Car Carriers

	1990	1991	1992	1993	1994	2002	2007	2017	2030
Total Number	760	834	816	752	605	767	773	788	813
Total SCNT*	31596	35160	34290	31250	26068	33453	34312	36290	39268
No. of ships in ballast	109	129	114	87	32	85	83	80	77
Total SCNT*(in ballast)	4126	4965	4625	3387	1231	3467	3325	3145	2953
Ave. NT (Laden)	42197	42830	42258	41899	43346	43968	44909	46815	49341
Ave. NT (in ballast)	37853	38488	40570	38931	38469	40788	40060	39313	38351
North-B Ship Laden	422	458	461	399	333	459	472	500	540
SCNT*(Laden)	17786	19351	19218	16701	14226	19882	20803	22814	25774
SCNT per vessel	42147	42251	41688	41857	42721	43317	44074	45628	47730
Cargo volume forecast*						2373	2485	2727	3077
South-B Ship Laden	229	247	241	266	240	223	218	208	196
SCNT*(Laden)	9684	10844	10447	11162	10611	10104	10184	10331	10541
SCNT per vessel	42288	43903	43349	41962	44213	45309	46717	49667	53781
Cargo volume forecast*						1021	1029	1045	1066
North-B Ship in ballast	8	8	4	16	10	11	11	11	12
SCNT*(in Ballast)	177	161	88	429	272	289	279	269	284
SCNT per vessel	22125	20125	22000	26813	27200	26266	25364	24493	23653
South-B Ship in ballast	101	121	110	71	22	74	72	69	65
SCNT*(in Ballast)	3949	4804	4537	2958	959	3178	3046	2876	2669
SCNT per vessel	39099	39702	41245	41662	43591	42944	42307	41679	41060

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Number of Car Carriers

	1993	1994	2002	2007	2017	2030
North bound	415	343	470	483	511	552
South bound	337	262	297	290	277	261
Total	752	605	767	773	788	813



Data

Five Years Ave. SCNT	North	42133
	South	43143
Increase Rate	North	0.0035
	South	0.0061

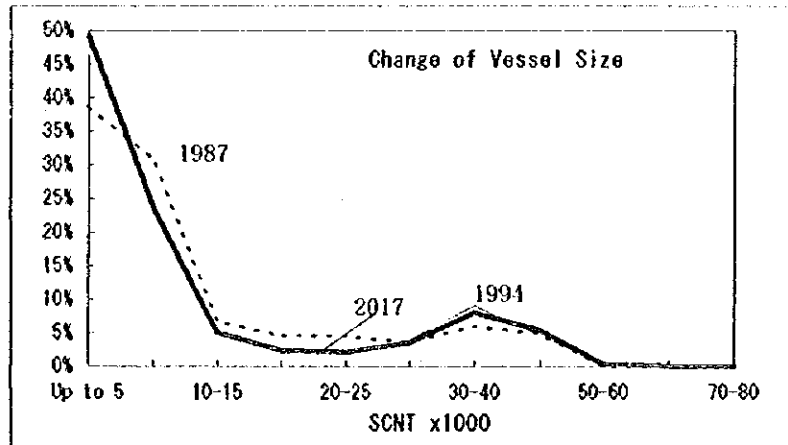
(9). SCNT and Other Data of Other Vessels

	1990	1991	1992	1993	1994	2002	2007	2017	2030
Total Number	1991	2151	1705	1585	1492	1712	1678	1698	1453
Total SCNT*	22546	27889	19183	16051	15721	19327	19243	19967	17780
Ships in ballast	318	560	319	336	348	381	376	382	341
Total SCNT*(in ballast)	2988	5915	1996	2086	2016	2567	2643	2800	2637
Ave. NT (Laden)	11690	13811	12400	11181	11980	12592	12750	13045	13618
Ave. NT (in ballast)	9396	10563	6257	6208	5793	6738	7029	7330	7733
North-B Ship Laden	683	709	568	509	499	666	663	678	643
SCNT*(Laden)	8241	11070	7987	6451	6430	9176	9269	9759	9612
SCNT per vessel	12066	15614	14062	12674	12886	13778	13980	14393	14949
Cargo volume forecast*						5621	5680	5981	5887
South-B Ship Laden	990	882	818	740	645	665	639	638	469
SCNT*(Laden)	11317	10904	9200	7514	7275	7584	7331	7408	5531
SCNT per vessel	11431	12363	11247	10154	11279	11404	11473	11611	11794
Cargo volume forecast*						6738	6508	6575	4914
North-B Ship in ballast	266	362	231	213	179	276	275	281	267
SCNT*(in Ballast)	2767	2959	1672	1643	1321	2090	2137	2241	2184
SCNT per vessel	10402	8174	7238	7714	7380	7573	7770	7973	8182
South-B Ship in ballast	52	198	88	123	169	105	101	101	74
SCNT*(in Ballast)	221	2956	324	443	695	477	506	559	453
SCNT per vessel	4250	14929	3682	3602	4112	4541	5015	5538	6115

*:1000ton

Number of Other Vessels

	1993	1994	2002	2007	2017	2030
North bound	722	678	942	938	959	910
South bound	863	814	770	740	739	543
Total	1585	1492	1712	1678	1698	1453



Data

Five Years Ave. SCNT	North	13460
	South	11295
Increase Rate	North	0.0029
	South	0.0012

(10). SCNT and Other Data of Passenger Ships

	1990	1991	1992	1993	1994	2002	2007	2017	2030
Total Number	56	41	45	66	72	66	71	85	108
Total SCNT*	569	462	519	799	851	739	806	986	1282
No. of ships in ballast	26	22	15	18	21	25	27	32	41
Total SCNT*(in ballast)	164	189	117	182	150	179	201	247	326
Ave. NT (Laden)	13500	14368	13400	12854	13745	13659	13750	13943	14269
Ave. NT (in ballast)	6308	8591	7800	10111	7143	7160	7444	7719	7951
North-B Ship Laden	20	9	15	26	31	23	25	30	38
SCNT*(Laden)	312	138	246	367	469	344	368	428	521
SCNT per vessel	15600	15333	16400	14115	15129	14945	14718	14274	13716
Cargo volume forecast*									
South-B Ship Laden	10	10	15	22	20	18	19	23	29
SCNT*(Laden)	93	135	156	250	232	216	237	311	435
SCNT per vessel	9300	13500	10400	11364	11600	11979	12471	13515	15005
Cargo volume forecast*									
North-B Ship in ballast	12	13	6	8	5	11	12	14	18
SCNT*(in Ballast)	77	111	52	63	32	73	84	102	136
SCNT per vessel	6416.7	8538	8667	7875	6400	6676	6965	7266	7579
South-B Ship in ballast	14	9	9	10	16	14	15	18	23
SCNT*(in Ballast)	87	78	65	119	118	106	117	145	190
SCNT per vessel	6214	8667	7222	11900	7375	7591	7812	8041	8276

*:1000ton

Number of Passenger Ships

	1993	1994	2002	2007	2017	2030
North bound	34	36	34	37	44	56
South bound	32	36	32	34	41	52
Total	66	72	66	71	85	108

(11). SCNT and Other Data of War Ships

	1990	1991	1992	1993	1994	2002	2007	2017	2030
Total Number	441	804	188	177	189	197	197	197	197
Total SCNT*	6994	11566	1666	1934	1674	2365	2323	2287	2260
No. of ships in ballast	57	157	3	5	3	16	16	16	16
Total SCNT*(in ballast)	1639	3547	56	85	82	435	393	357	330
Ave. NT (Laden)	13945	12394	8703	10750	8559	10663	10663	10663	10663
Ave. NT (in ballast)	28754	22592	18667	17000	27333	27188	24563	22313	20625
North-B Ship Laden	114	380	93	75	85	84	84	84	84
SCNT*(Laden)	1264	5068	892	782	789	903	903	903	903
SCNT per vessel	11088	13337	9591	10427	9282	10745	10745	10745	10745
Cargo volume forecast*									
South-B Ship Laden	270	267	92	97	101	97	97	97	97
SCNT*(Laden)	4091	2951	718	1067	803	1027	1027	1027	1027
SCNT per vessel	15152	11052	7804	11000	7950	10592	10592	10592	10592
Cargo volume forecast*									
North-B Ship in ballast	57	37	0	1	2	8	8	8	8
SCNT*(in Ballast)	1639	919	0	40	42	172	176	179	183
SCNT per vessel	28754	24838	0	40000	21000	21464	21938	22423	22918
South-B Ship in ballast	0	120	3	4	1	8	8	8	8
SCNT*(in Ballast)	0	2628	56	45	40	263	217	178	147
SCNT per vessel	0	21900	18667	11250	40000	32926	27102	22309	18363

*:1000ton

Number of War Ships

	1993	1994	2002	2007	2017	2030
North bound	76	87	92	92	92	92
South bound	101	102	105	105	105	105
Total	177	189	197	197	197	197

(12). Ship Size Distribution by Type, Distribution of Vessels By Size And Type (2017)

Ship Size Distribution by Type (2017) (%)

Size Group SCNT	Tanker	Bulk C.	Contai- ner C.	Cargo C.	Car C.	Others
Up to 5000	7.0	0.4	0.8	40.0	0.1	49.3
5000-10000	11.0	3.8	1.7	47.8	0.2	23.9
10000-15000	12.3	22.7	4.5	7.7	0.2	5.1
15000-20000	13.2	19.5	12.7	3.1	0.5	2.4
20000-25000	3.9	19.8	13.0	0.7	1.2	2.1
25000-30000	2.6	9.4	17.0	0.2	4.7	3.5
30000-40000	6.6	15.1	20.0	0.5	14.2	8.0
40000-50000	8.0	2.0	23.5	0.1	50.9	5.3
50000-60000	6.3	2.9	6.3	0.0	20.7	0.4
60000-70000	5.2	1.3	0.6	0.0	7.4	0.1
70000-80000	6.6	2.0	0.0	0.0	0.0	0.0
80000-90000	3.3	0.7	0.0	0.0	0.0	0.0
90000-100000	0.4	0.1	0.0	0.0	0.0	0.0
100000-120000	1.8	0.1	0.0	0.0	0.0	0.0
Over 120000	11.8	0.3	0.0	0.0	0.0	0.0
Total	100	100	100	100	100	100

Distribution of Vessels by Size and Type (2017) (Number)

Size Group SCNT	Tanker	Bulk C.	Contai- ner C.	Cargo C.	Car C.	Others
Up to 5000	284	16	47	2107	0	836
5000-10000	449	145	108	2520	1	406
10000-15000	501	862	283	406	2	87
15000-20000	536	742	794	163	4	40
20000-25000	159	751	818	36	9	35
25000-30000	104	359	1067	10	37	60
30000-40000	270	574	1257	24	112	136
40000-50000	327	76	1474	6	401	91
50000-60000	255	109	393	2	163	6
60000-70000	211	48	37	0	58	2
70000-80000	270	75	0	0	0	0
80000-90000	134	26	0	0	0	0
90000-100000	16	3	0	0	0	0
100000-120000	75	2	0	0	0	0
Over 120000	482	11	0	0	0	0
Total	4074	3797	6277	5273	788	1698

Table 3.2.2

The Sample of Vessels with the High Mast

The Sample of Vessels With the Mast Height Above 65 m
Under the Japanese Flag

Name	Type	DWT	Build	M.Height(m)
Wakayamamaru	Bulk	133357	1981	78.84
London Highway	Car.C	14683	1986	76.01
Aobayamamaru	Bulk	138655	1981	73.71
Century Leader III	Car.C	14155	1986	72.62
Nisseimaru	Tanker	484276	1975	71.89
Mercury Ace	Car.C	16603	1969	69.22
Neptune Ace	Car.C	16560	1985	69.22
North Sea	Container	35229	1969	69.05
Aurora Ace	Car.C	17090	1984	68.84
Century Leader I	Car.C	11961	1984	65.88
Wellintonmaru	Container	29888	1979	65.38
Australianhighway	Car.C	9147	1981	64.89
Usamaru	Tanker	269500	1972	63.76
America-maru	Container	32207	1982	63.56
Toyofuji14	Car.C	19415	1986	63.2
Isemaru	Tanker	258674	1974	63.14

Note: Only vessels with mast height data sampled

Mast Height is in ballast condition

Source: Japan Shipping Register (1991)

The Sample of Vessels With the Mast Height Above 50 m
Under Foreign Flags

Name	Type	DWT	Build	M.Height(m)
Waasland	Tanker	147327	1986	62.5
Wind Spirit	Passenger	847	1988	61.9
Wind Star	Passenger	922	1986	61.9
Wind Song	Passenger	922	1987	61.9
Gliry Hope	Bulk	68158	1987	61.8
New Amity	Bulk	68192	1986	61.8
Far Eastern Grain	Bulk	68337	1987	61.8
Northwest Snipe	Gas	66695	1990	60.6
Northwest Sanderling	Gas	66810	1989	60.6
Norway	Passenger	13960	1961	57.5
Happy Buccaneer	General	13740	1984	56.7
Punteng II	Ferry		1976	56.7
Pecos	Tanker	28851	1950	55.8
Fantasy	Passenger	7200	1990	54.2
Hoegh Gandria	Gas	66999	1977	53.5
Chevron Horizon	Tanker	123969	1974	53.0
Docevale	Bulk	75426	1985	52.4
Queen Elizabeth II	Passenger	15521	1969	52.1
Sokolica	Tanker	133300	1975	52.0
Silja serenade	Passenger	4648	1990	51.9
Violaine	Ferry		1982	50.6
Southern	Gas	75171	1978	50.0
Arzew	Gas	65674	1978	50.0
Gamma	Gas	65674	1979	50.0
Viola Gorthon		10917	1987	50.0

Note: Only vessels with mast height data sampled

Mast Height is in full loaded condition

Source: Lloyd's Shipping Register (1991)

Mast Height (In Ballast) and Draught (In Full Loaded)

DWT	Japanese Flag		Foreign Flag	
	MastHeight	Draught.F	MastHeight	Draught.F
500	14.9	3.1	1.82	3.0
10000	28.5	7.7	3.40	7.5
20000	32.9	9.5	3.93	9.2
30000	35.9	10.7	4.28	10.4
50000	40.0	12.5	4.76	12.2
100000	46.5	15.4	5.49	15.1
150000	50.7	17.4	5.98	17.1
200000	53.9	19.0	6.35	18.6
250000	56.6	20.4	6.65	20.0
300000	58.8	21.5	6.90	21.1
350000	60.8	22.5	7.13	22.1
400000	62.6	23.5	7.33	23.0
450000	64.2	24.3	7.51	23.9
500000	65.7	25.1	7.68	24.7
555000	67.2	25.9	7.85	25.5
600000	68.3	26.5	7.97	26.1

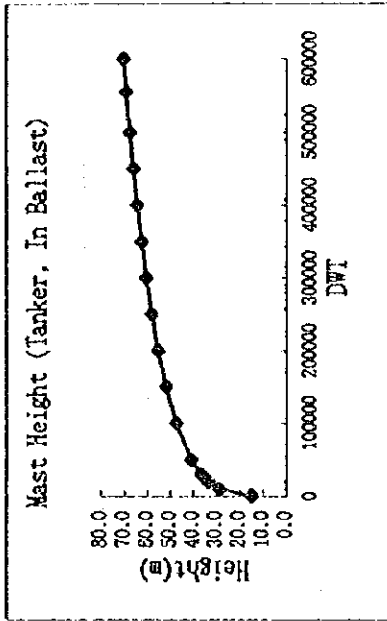
Note: F and B mean in full loaded condition and in ballast

Sample Data of Transits Over 400000DWT (2/1995-6/1995)

Name	MastHeight	Draught.F	Length	Beam	MHeight	Build T.Date
STENA KING	450.611	25.0	368.95	68.06		1978 14/2
KING ALEXANDER	499.000	24.0	350.37	79.00		12/3
HELLAS FOS	554.974	28.6	406.82	63.05	70	1979 6/3,9/6
STENA QUEEN	457.841	25.0	362.29	68.00		1977 14/3,3/5
MIRA STAR	423.642	23.0	368.12	70.28		1976 17/3,8/6
RED SEAGULL	406.259	22.2	350.30	70.07		1975 23/3,5/6
BRIDGETON	407.823	22.6	353.90	70.30		1976 8/4
ACROPOLIS	409.400	23.4	369.25	63.25		1978 27/4
AURIGA	424.423	22.8	364.52	69.05		1976 3/4
PARTHENON	409.400	23.3	369.25	63.25		15/5
KAPETAN GIANNIS	516.895	24.4	390.12	71.00	64	1977 28/5

M:Height; Mast Height

T: date; transits date



NOTE: The statistical analysis is based on the index function.

$$Y = aX^b$$

X: DWT

$$a = 3.87, b = 0.218$$

SAMPLE DATA

NISSEIMARU (JAPAN)	DWT	484276 ton
	A.Draught	71.89 m
	Draught.B	3.91 m
KAPETAN- GIORGIS	DWT	456390 ton
	A.Draught	71 m
	Beam	68 m

Table 3.2.3(1) Mast High : Tanker

THE FEASIBILITY STUDY
ON A BRIDGE OVER NORTHERN
PART OF THE SUEZ CANAL

Mast Height in Ballast and Draught In Full Loaded

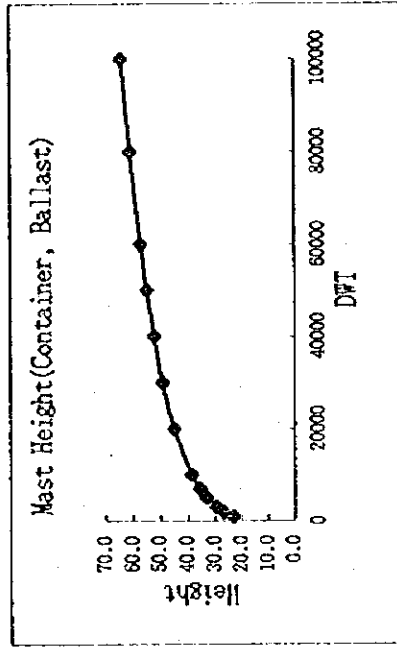
DWT	Japanese Flag		Foreign Flag	
	MastH.	Draught.F	MastH.	Draught.F
500	19.5	3.2	3.40	
1000	22.6	4.0	3.79	3.7
2000	26.0	4.9	4.23	4.6
3000	28.3	5.5	4.51	5.3
5000	31.5	6.5	4.90	6.2
7000	33.7	7.2	5.17	6.9
10000	36.3	8.0	5.47	7.7
20000	41.9	9.8	6.10	9.6
30000	45.6	11.1	6.51	10.9
40000	48.4	12.1	6.82	12.0
50000	50.7	12.9	7.06	12.9
60000	52.6	13.7	7.27	13.6
80000	55.9	14.9	7.61	14.9
100000	58.5	15.9	7.88	16.0
			0	
			0	

Note: F and B mean in full loaded condition and in ballast

Sample Data of Transits Over 65000DWT (2/1995-6/1995)

Name	DWT(M)	Draught.F	Length	Beam	M.Height	Build	Transits date
DRESDEN EXPRESS	67.686		283.70	32.25		1991	12/2,23/2,28/4
ESSEN EXPRESS	67.649		283.72	32.25			3/2,17/3,18/5,8/6
SEALAND MOTIVATOR	82.000		248.25	32.31		1984	8/2,25/3,16/4
HOECHST EXPRESS	67.684		283.70	32.25		1991	9/2,23/3,13/4,25/5,16/6
LUDWIGSHAFEN EXPRESS	67.686		283.70	32.25		1991	9/2,13/4,4/5,12/6
LEVERKUSEN EXPRESS	88.424		293.98	32.25		1991	16/2,9/3,20/4,11/5,22/6
STUTTGART EXPRESS	67.685		283.72	32.25		1992	17/2,30/3,29/5,19/6
HANNOVER EXPRESS	67.686		294.11	32.25		1990	9/3,8/5,27/5
HAMBURG EXPRESS	67.684		294.09	32.25			1/5,20/5,26/6

SAMPLE DATA			
	DWT:	Draught.B	M.Height
NORTHEAGAPAN)	35.229	9.07	69.05
			Build
			1972



NOTE: The statistical analysis is based on the index function.

$Y=aX^b$

X:DWT

$a=5.1, b=0.22$

Table 3.2.3(2) Mast High : Container Carrier

THE FEASIBILITY STUDY
ON A BRIDGE OVER NORTHERN
PART OF THE SUEZ CANAL

Table 3.2.3(3) Mast High : Bulk Carrier

THE FEASIBILITY STUDY
ON A BRIDGE OVER NORTHERN
PART OF THE SUEZ CANAL

Mast Height in Ballast and Draught In Full Loaded Bulk C. unit:m

DWT	Japanese Flag		Foreign Flag	
	MastH.	Draught.F	Draught.B	MastH. Draught.F
500	16.1	3.1	2.00	18.2 3.4
1000	18.6	3.9	2.31	21.0 4.1
2000	21.4	4.7	2.68	24.2 5.0
3000	23.3	5.3	2.92	26.3 5.5
5000	25.9	6.2	3.25	29.2 6.4
7000	27.7	6.9	3.50	31.3 7.0
10000	29.8	7.6	3.77	33.6 7.8
20000	34.4	9.3	4.37	38.8 9.4
30000	37.4	10.5	4.76	42.1 10.5
40000	39.7	11.5	5.06	44.7 11.4
50000	41.6	12.2	5.30	46.8 12.2
60000	43.2	12.9	5.51	48.6 12.8
80000	45.8	14.1	5.86	51.5 13.9
100000	47.9	15.0	6.14	53.9 14.7
200000	55.3	18.4	7.11	62.1 17.9
	60.1	20.8	7.75	20.0

Note: F and B mean in full loaded condition and in ballast

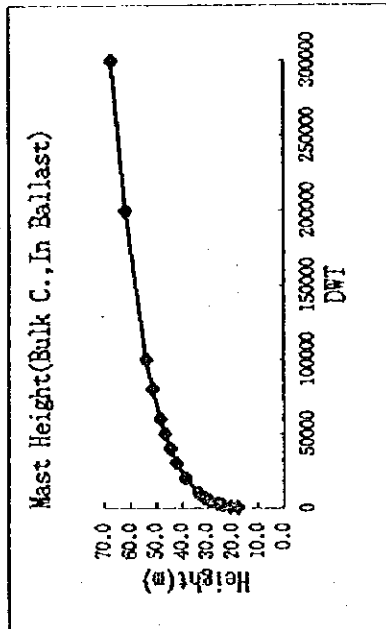
Sample Data of Transits Over 180000DWT (2/1995-6/1995)

Name	DWT(m)	Draught.F	Beam	M.Height	Build	Transits date
TRADE FORTITUDE	245,288	313.48	52.0	1972	25/2	
NISHURA	194,468	18.45	47.5	57.76	2/3	
YAMATO	184,349	281.16	46.0	1991	17/5	
BUCCLEUCH	182,675	272.21	47.3	1993	31/5	
RIVER SPIRIT	183,316	281.09	46.0		22/6	

M.Height, Mast Height

Sample Data (Japanese Flag)

Name	DWT(m)	Draught.B	M.Height	Build
WAKAYAMAMARU	133,357	2.76	78.84	1981
AOBAYAMAMARU	138,655	8.09	73.71	1981



NOTE : The statistical analysis is based on the index function.

$$Y=aX^b$$

$$X:DWT$$

$$a=5.09, b=0.205$$

Mast Height in Ballast and Draught In Full Loaded

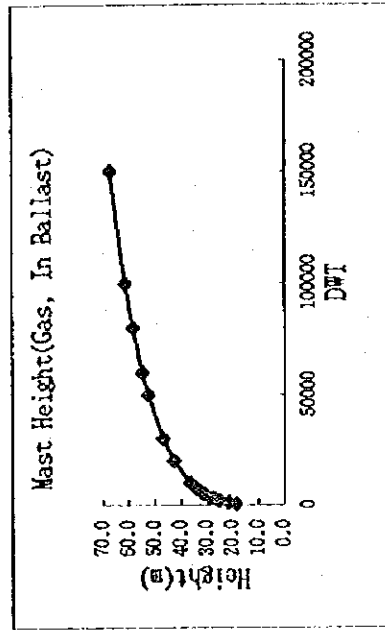
DWT	Japanese Flag		Foreign Flag	
	MastH.	Draught.F	MastH.	Draught.F
500	16.9	3.6	18.8	3.6
1000	19.6	4.3	21.9	4.3
2000	22.8	5.0	25.6	5.2
3000	24.9	5.5	28.0	5.8
5000	27.8	6.2	31.4	6.6
7000	29.9	6.7	33.9	7.2
10000	32.3	7.3	36.7	8.0
20000	37.5	8.6	42.9	9.6
30000	41.0	9.5	47.0	10.7
50000	45.8	10.7	52.7	12.2
60000	47.6	11.1	54.8	12.8
80000	50.7	11.9	58.5	13.9
100000	53.2	12.5	61.5	14.7
200000	58.1	13.8	66.4	16.4

Note: F and B mean in full loaded condition and in ballast

Sample Data of Transits Over 60000DWT (2/1995-6/1995)

Name	DWT (TM)	Draught	Length	Beam	M.Height	Build	Transits date
BERGE RACHEL(LPG)	63,296	71.980	219.21	35.5			3/2,25/5
LNG FINMA(LNG)			277.25	41.8			1983/8/2,26/2,13.3

M.Height/Mast Height



NOTE: The statistical analysis is based on the index function.

$$Y=aX^b$$

X: DWT

$$a=4.665, b=0.224$$

Table 3.2.3(4) Mast High : Gas Carrier

THE FEASIBILITY STUDY
ON A BRIDGE OVER NORTHERN
PART OF THE SUEZ CANAL

Table 3.2.4 Factors of Mast Height

1. Height of Radar Mast

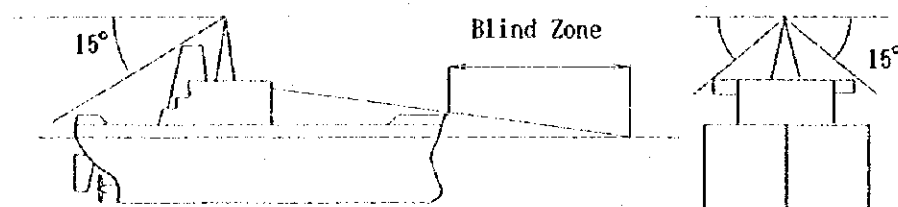
- a. Height of radar mast on the living area deck needs not to have the electric wave trouble caused by surrounding structure.
- b. The navigation light is on the radar mast. The height of the light is given by The International Regulations for Preventing Collisions at Sea.

The height of radar mast needs to cover both height. (In usual, the height is about 10 m)
It is possible to make a design with foldable style.

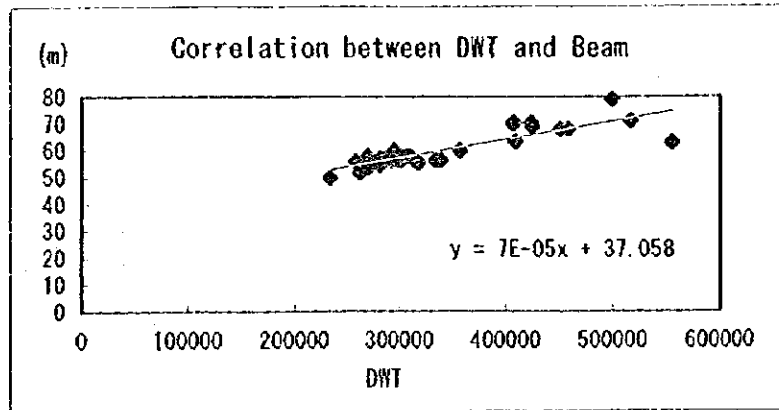
2. Height of ship

- a. Height of ship is measured from bottom of vessel to top of deck.
- b. Ship depth is one of the factor that determine the height of ship.
Ship depth is determined by the necessary height of deck and the necessary DWT size.
- c. The height of deck is given by The International Convention on Load Lines and that is determined from the necessary ship size.
- d. The total height of living deck is estimated by multiplying the each height of deck (3.0/3.5 m) and necessary numbers (5/6 decks).
- e. The height of compass bridge needs the height to satisfy the front scope.
The length of the blind zone needs to be less than $1.5 * LOA$ (Length Over All) in ballast and it needs to be less than the smaller among $2 * LOA$ and 500 m in full load condition.

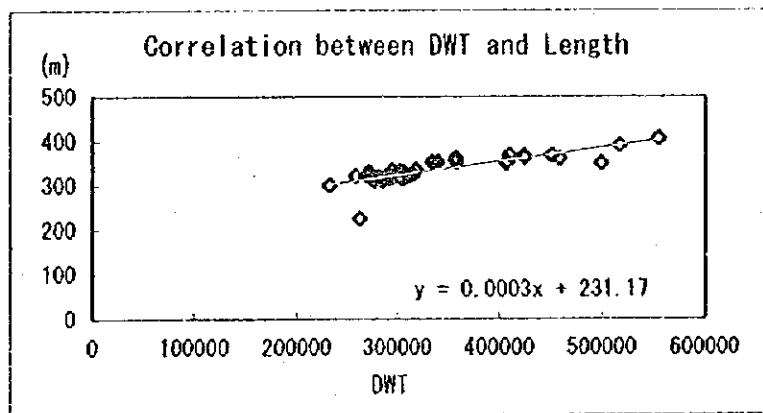
The mast height from the sea surface is determined by summing up the height of ship and the height of radar mast mentioned above.



1. DWT and Beam (Tankers 200000DWT over, and passing the Canal)



2. DWT and Length (Tankers 200000DWT over, and passing the Canal)



3. DWT and SCNT (Tankers 200000DWT over, and passing the Canal)

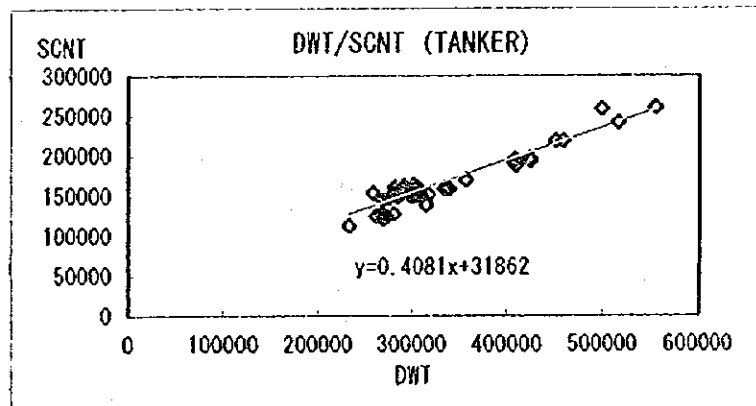
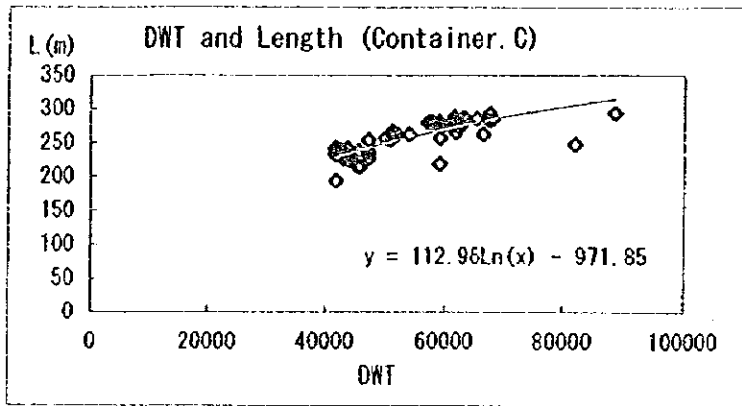
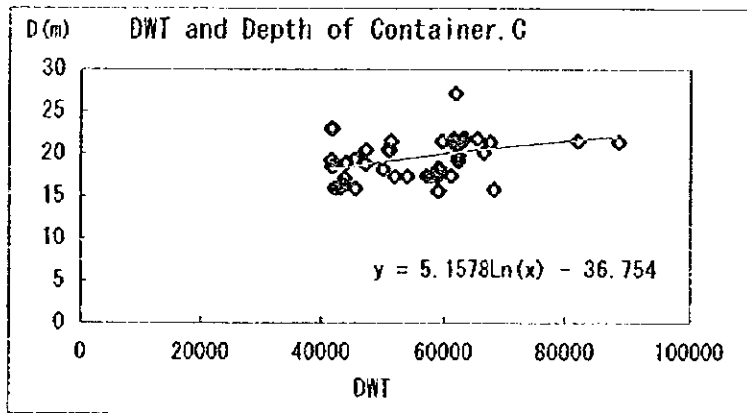


Fig. 3.2.1 Ship Dimension (1)

4. DWT and Ship Length (Container Carriers over 60000DWT or Built After 1991)



5. DWT and Ship Depth (Container Carriers over 60000DWT or Built After 1991)



6. DWT and SCNT (Container Carriers over 60000DWT or Built After 1991)

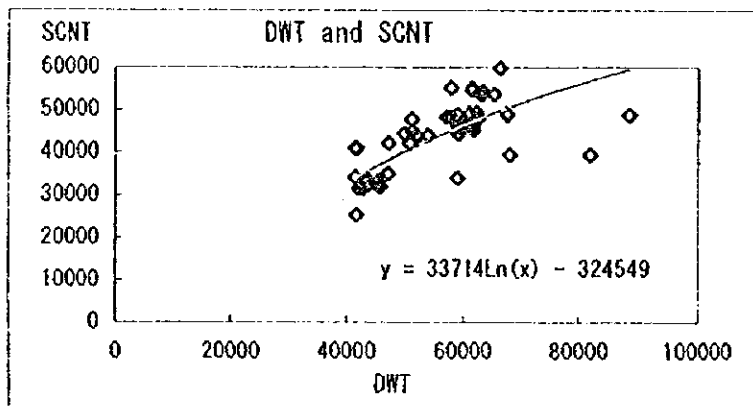


Fig. 3.2.1 Ship Dimension (2)

Chapter 4 Traffic Demand Projection

CONFIDENTIAL - SECURITY INFORMATION



CHAPTER 4 TRAFFIC DEMAND PROJECTION

A 4.1 Traffic Survey

A 4.1.1 Introduction

The purpose of the traffic survey was carried out to seize the existing traffic situation across the Suez Canal. The traffic survey was conducted by the JICA Study team associated by a local consultant during the period from November 4, 1995 to December 10, 1995. The location of the traffic survey was at Qantara, Ferdan, No.6(Ismailiya), Srabuim, A.H. Tunnel and Shatt (shown in Fig. 4.1.1). The survey period and operation hour of each ferry station are shown in Table 4.1.2. The traffic survey consists of the following three part:

1) Traffic count survey

Survey Item

The survey items are shown in Table 4.1.2.

Method

The survey stations were set up at both sides of the Suez Canal. All the vehicles passing the survey station were recorded by vehicle Type.

Results

Weekly and monthly fluctuation adjustment ratios (Table 4.1.5) calculated by the traffic counting data by GARBLT and SCA were adapted to calculate the Annual Average Daily Traffic (AADT). Table 4.1.6 shows AADT. Table 4.1.8 shows the raw traffic count survey data.

2) Roadside OD interview survey

Survey Item

The survey items are shown in Table 4.1.3.

Method

Interviews were conducted for drivers of the vehicles by the surveyors.

Results

Over 30% of drivers of these vehicles is interviewed in the OD survey at each survey station. Table 4.1.9 show the OD matrix.

3) Travel time survey of vehicles crossing the Suez Canal

Survey Item

The survey items are shown in Table 4.1.4.

Method

During the survey period, arrival time, boarding time and leaving time of all the vehicles, and departure time, arrival time of ferries were recorded.

Results

Crossing time of each vehicle and crossing time of all the vehicles were calculated and shown in Table 4.1.11 and Table 4.1.12.

A 4.1.2 Location and Survey Sheet

- Fig. 4.1.1 Location of traffic survey
- Table 4.1.1 Survey sheet for traffic count
- Table 4.1.2 Survey sheet for roadside OD interview
- Table 4.1.3 Survey sheet for travel time of vehicle crossing the Suez Canal

A 4.1.3 Summary Table for Survey Duration

- Table 4.1.4 Survey period and ferry operation hour

A 4.1.4 Results of Traffic Count Survey

- Fig. 4.1.2 Flow of the data processing
- Table 4.1.5 Fluctuation adjustment ratio
- Table 4.1.6 AADT
- Table 4.1.7 Composition ratio by vehicle type
- Table 4.1.8 Raw traffic count survey data

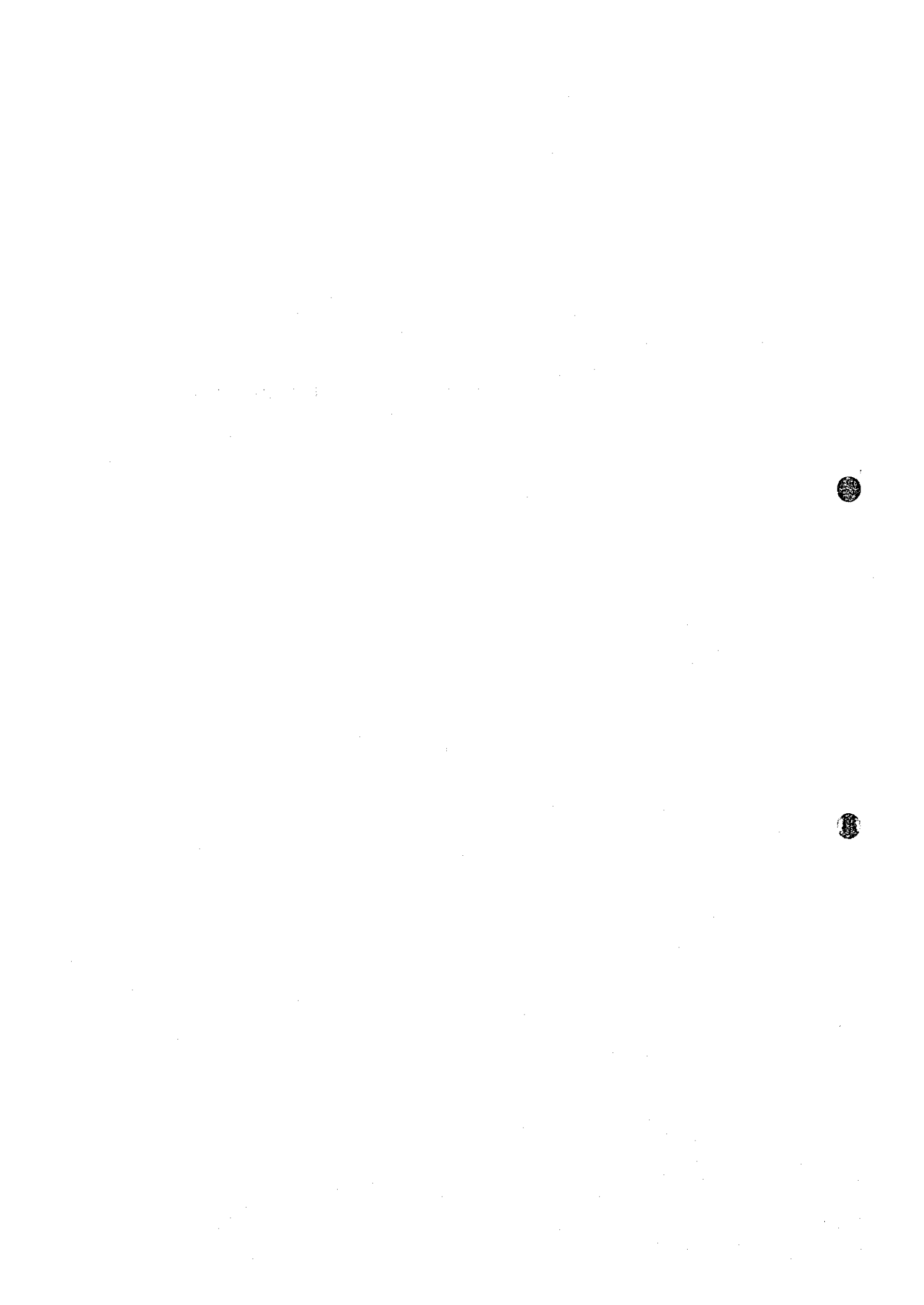
A 4.1.5 Results of OD Interview Survey

- Table 4.1.9 OD matrix by vehicle type, by survey station

A 4.1.6 Results of Travel Time Survey of Vehicle Crossing the Suez Canal

- Table 4.1.10 Crossing time of each vehicle
- Table 4.1.11 Average crossing time of all the vehicles by direction, by ferry station

A 4.1.2 Location and Survey Sheet



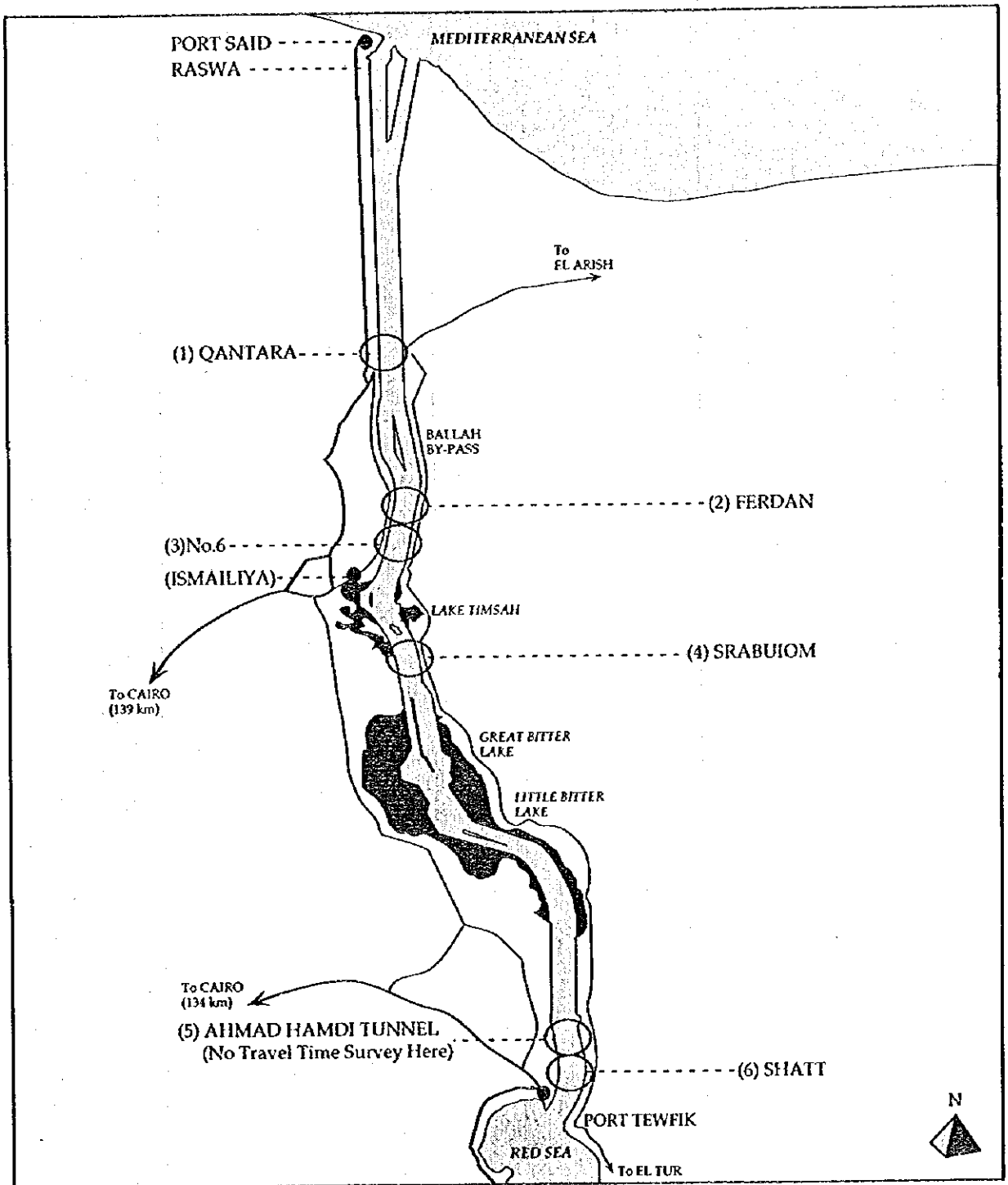














Fig. 4.1.1 Location of Traffic Survey

Table 4.1.1 Survey Sheet for Traffic Count

DATE		CROSSING POINT				DIRECTION		SHEET NO.		RECORDED BY		Vehicle Type	
						1. East to West 2. West to East						1. Passenger Car 	
NO.	HOUR	VEHICLE TYPE	TRIP OF PURPOSE	NUMBER OF PASSENGERS (People)	KIND OF COMMODITY	VOLUME OF FREIGHT (TON)	TRIP ORIGIN		TRIP DESTINATION		2. Taxi 		
							Name of Governorate or District / Marakez	CODE	Name of Governorate or District / Marakez	CODE			
1												3. Micro Bus 	
2												4. Van (pick up) 	
3												5. Large Bus 	
4												6. Light Truck 	
5												7. Heavy Truck, Trailer 	
6												8. Motor cycle 	
7												9. Tractor 	
8												10. Others  Animal cart  Wheelbarrow If any	
9													
10													

HOUR	TRIP OF PURPOSE	KIND OF COMMODITY
8. 8:00 - 9:00	1. Home	1. Crude Oil
9. 9:00 - 10:00	2. Work	2. Petroleum Products
10. 10:00 - 11:00	3. School	3. Natural Gas
11. 11:00 - 12:00	4. Business	4. Cement
12. 12:00 - 13:00	5. Shopping	5. Other Construction Materials
13. 13:00 - 14:00	6. Others	6. Phosphate
14. 14:00 - 15:00		7. Iron Ore
15. 15:00 - 16:00		8. Coal / Coke
16. 16:00 - 17:00		9. Other Minerals
17. 17:00 - 18:00		10. Wheat
18. 18:00 - 19:00		11. Other Cereals
19. 19:00 - 20:00		12. Fruit / Vegetables
20. 20:00 - 21:00		13. Sugar Cane
21. 21:00 - 22:00		14. Fiber Crops
		15. Live Stock
		16. Animal Products
		17. Other Agricultural Products
		18. Sugar
		19. Edible Oil / Fats
		20. Animal Feed
		21. Beverages
		22. Other Food Products
		23. Chemical Products
		24. Metal / Metal Products
		25. Textile
		26. Fertilizer
		27. Pulp / Paper
		28. Lumber / Timber
		29. Other Manufactural Products
		30. Mixed Commodities

Table 4.1.2 Survey Sheet for Roadside OD Interview


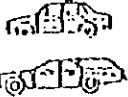
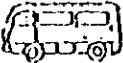

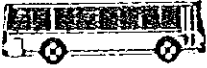





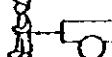

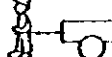
DATE	CROSSING POINT	DIRECTION		RECORDED BY	Vehicle Type
		1 EAST TO WEST	2 WEST TO EAST		1. Passenger Car
Time					
					2. Taxi
Passenger Car					
Subtotal					
Taxi					
Subtotal					
Micro Bus					
Subtotal					
Van (Pick up)					
Subtotal					
Large Bus					
Subtotal					
Light Truck					
Subtotal					
Heavy Truck					
Subtotal					
Motor Cycle					
Subtotal					
Tractor					 
Subtotal					
Others					 
Subtotal					If any

Table 4.1.3 Survey Sheet for Travel Time Survey (1/4)

PART I Recorded by Surveyor A at Entrance of the Ferry Station

DATE	CROSSING POINT	PERIOD	
		1 EAST TO WEST	2 WEST TO EAST
		1 CONVOY OPERATION	2 NON CONVOY OPERATION

ITEM NO	Arrival time of the vehicle	Type of the vehicle	License plate

Table 4.1.3 Survey Sheet for Travel Time Survey (3/4)

DATE	PERIOD
	1 CONVOY OPERATION
	2 NON CONVOY OPERATION

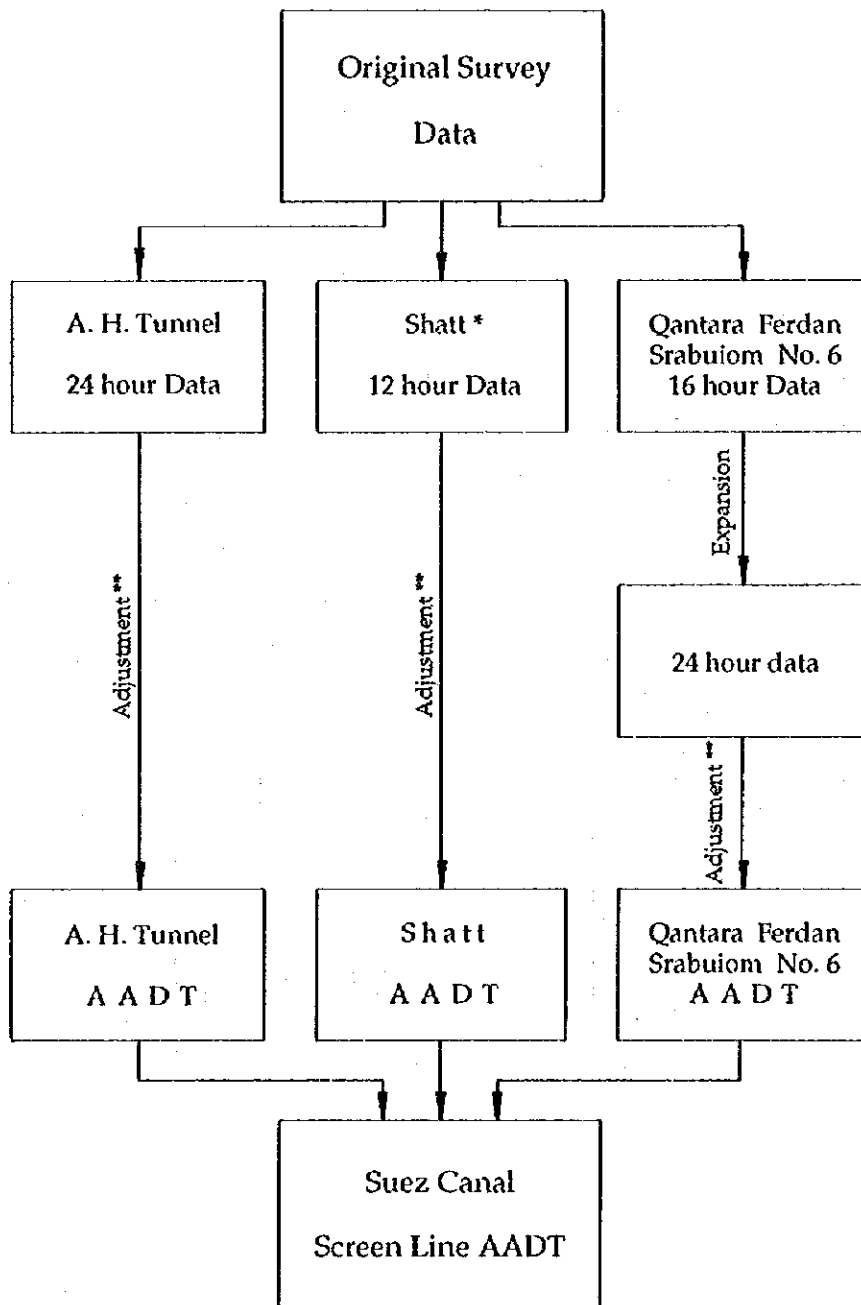
Group No	Departure time	Arrival time	Number of Passenger	Remarks

A 4.1.3 Summary Table for Survey Duration

Table 4.1.4 Survey Period and Ferry Operation Hour

Location	Survey Item	Traffic Count Survey	OD Interview Survey	Travel Time of Vehicle Survey		Ferry Operation Hour
	Period			Convoy	Non convoy	
Qantara	Workday	8:00 to 22:00	8:00 to 22:00	16:00 to 18:00	11:00 to 13:00	24h
	Friday	8:00 to 22:00	8:00 to 22:00	16:00 to 18:00	9:30 to 11:30	
Ferdan	Workday	8:00 to 24:00	8:00 to 24:00	15:00 to 17:00	10:00 to 12:00	6:00 to 24:00
	Friday	8:00 to 24:00	8:00 to 24:00	15:00 to 17:00	9:30 to 11:30	18h
No.6	Workday	8:00 to 22:00	8:00 to 22:00	15:00 to 17:00	10:00 to 12:00	6:00 to 22:00
	Friday	8:00 to 22:00	8:00 to 22:00	14:30 to 16:30	9:00 to 11:00	16h
Srabuion	Workday	8:00 to 22:00	8:00 to 22:00	11:00 to 13:00	16:00 to 18:00	6:00 to 22:00
	Friday	8:00 to 22:00	8:00 to 22:00	13:00 to 15:00	16:00 to 18:00	16h
A.H.Tunnel	Workday	5:00 to 5:00	5:00 to 5:00			24h
	Friday	5:00 to 5:00	5:00 to 5:00			
Shatt	Workday	5:00 to 17:00	5:00 to 17:00	8:40 to 10:40	11:30 to 13:30	5:00 to 17:00
	Friday	5:00 to 17:00	5:00 to 17:00	8:30 to 10:30	11:45 to 13:45	12h

A 4.1.4 Results of Traffic Count Survey



*: The ferry operation time is from 5:00 to 17:00
 **: Fluctuation adjustment ratio are shown in Table 3.1.5

Fig. 4.1.2 Flow of the Data Processing

Table 4.1.5 Fluctuation Adjustment Ratio

Weekly*

Station No.**		1	103	107	137	138	143	Average***
Date								
Mon	Traffic	455	346	727	371	72	893	0.949
	Ratio	0.912	0.841	0.973	0.988	0.939	1.043	
Tue	Traffic	455	265	673	378	85	983	0.953
	Ratio	0.912	0.644	0.901	1.006	1.108	1.148	
Wed	Traffic	470	574	742	365	84	999	1.094
	Ratio	0.942	1.395	0.993	0.972	1.095	1.167	
Thu	Traffic	505	449	804	387	71	584	0.970
	Ratio	1.01173	1.091	1.076	1.030	0.926	0.682	
Fri	Traffic	589	424	716	399	68	728	0.995
	Ratio	1.18002	1.030	0.959	1.062	0.886	0.850	
Sat	Traffic	495	423	870	364	77	892	1.042
	Ratio	0.99198	0.848	1.743	0.729	0.154	1.788	
Sun	Traffic	525	400	697	365	80	913	1.006
	Ratio	1.0518	0.972	0.933	0.972	1.043	1.067	
Average	Traffic	499	412	747	376	77	856	1.000
	Ratio	1	1	1	1	1	1	

* Source : GARIB

** No. of Volume Counting Stations by GARIB

*** Average date were used

Monthly*

Month**	Qantara		Ferdan		No.6		Serabium		Shatt		A.H. Tunnel		Total	
	V/D	Ratio	V/D	Ratio	V/D	Ratio	V/D	Ratio	V/D	Ratio	V/D	Ratio	V/D	Ratio
1	1,494	0.864	464	0.965	417	0.983	554	1.009	320	1.155	1008	0.828	4,257	0.910
2	1,408	0.814	461	0.958	382	0.901	540	0.984	383	1.383	952	0.782	4,126	0.882
3	1,048	0.606	455	0.946	432	1.019	483	0.880	287	1.036	1083	0.890	3,788	0.810
4	2,088	1.207	569	1.183	448	1.057	555	1.011	310	1.119	1166	0.958	5,136	1.098
5	2,625	1.517	505	1.050	504	1.189	538	0.980	254	0.917	1150	0.945	5,576	1.192
6	1,813	1.048	570	1.185	453	1.068	545	0.993	422	1.523	1518	1.247	5,321	1.137
7	1,794	1.037	429	0.892	289	0.682	582	1.060	169	0.610	1524	1.252	4,787	1.023
8	1,752	1.013	409	0.850	418	0.986	558	1.016	158	0.570	1512	1.242	4,807	1.027
9	1,883	1.088	417	0.867	471	1.111	516	0.940	290	1.047	1357	1.115	4,934	1.054
10	1,751	1.012	626	1.301	427	1.007	577	1.051	251	0.906	1143	0.939	4,775	1.021
11	1,555	0.899	419	0.871	428	1.009	572	1.042	239	0.863	1101	0.905	4,314	0.922
12	1,553	0.898	450	0.936	420	0.991	568	1.035	239	0.863	1093	0.898	4,323	0.924
Average	1,730	1	481	1	424	1	549	1	277	1	1,217	1	4,679	1

* Source : SCA

** A.H. Tunnel is in 1992. Others are July 1993 to June 1994

Table 4.1.6 AADT

		Unit: Vehicles										
1 Workday		Passenger Car	Taxi	Micro Bus	Van (Pick up)	Large Bus	Light Truck	Heavy Truck	Motor Cycle	Tractor	Others	Sub. T.
Station	Type											
	Volume											
Qantara	Volume	659	464	109	841	61	318	0	20	3	38	2513
	Ratio	26.24%	18.46%	4.34%	33.48%	2.41%	12.67%	0.00%	0.78%	0.12%	1.51%	100%
Ferdan	Volume	52	10	20	66	32	16	525	4	0	4	728
	Ratio	7.10%	1.35%	2.70%	9.12%	4.39%	2.20%	72.14%	0.51%	0.00%	0.51%	100%
No. 6	Volume	162	48	53	156	16	15	0	14	1	7	473
	Ratio	34.29%	10.16%	11.22%	33.02%	3.39%	3.17%	0.00%	2.96%	0.21%	1.48%	100%
Srabuom	Volume	102	9	19	341	0	32	134	25	18	26	706
	Ratio	14.42%	1.24%	2.69%	48.30%	0.00%	4.53%	18.95%	3.57%	2.61%	3.71%	100%
A.H. Tunnel	Volume	369	184	198	247	159	204	328	0	0	1	1691
	Ratio	21.80%	10.90%	11.72%	14.60%	9.39%	12.07%	19.40%	0.00%	0.00%	0.07%	100%
Shatt	Volume	13	0	4	16	0	7	215	2	0	4	261
	Ratio	5.12%	0.00%	1.40%	6.06%	0.00%	2.80%	82.46%	0.93%	0.00%	1.40%	100.16%
Total		1357	715	403	1668	267	593	1202	65	22	80	6372
Ratio		21.30%	11.22%	6.32%	26.17%	4.20%	9.30%	18.87%	1.02%	0.35%	1.25%	100%

		Unit: Vehicles										
2 Friday		Passenger Car	Taxi	Micro Bus	Van (Pick up)	Large Bus	Light Truck	Heavy Truck	Motor Cycle	Tractor	Others	Sub. T.
Station	Type											
	Volume											
Qantara	Volume	503	420	92	605	79	181	0	13	1	39	1934
	Ratio	25.99%	21.74%	4.78%	31.30%	4.11%	9.34%	0.00%	0.67%	0.07%	2.02%	100%
Ferdan	Volume	49	11	11	54	22	9	286	1	3	5	411
	Ratio	9.04%	2.44%	2.44%	12.22%	4.89%	1.95%	64.75%	0.24%	0.73%	1.22%	100%
No. 6	Volume	152	60	38	157	18	10	0	30	1	37	503
	Ratio	30.26%	11.97%	7.62%	31.13%	3.48%	1.96%	0.00%	5.83%	0.22%	7.40%	100%
Srabuom	Volume	58	14	4	376	2	29	58	50	13	5	610
	Ratio	9.56%	2.26%	0.70%	61.72%	0.35%	4.69%	9.56%	8.17%	2.09%	0.87%	100%
A.H. Tunnel	Volume	274	174	155	214	208	128	283	6	0	0	1441
	Ratio	19.01%	12.06%	10.74%	14.84%	14.45%	8.89%	19.63%	0.39%	0.00%	0.00%	100%
Shatt	Volume	10	0	2	1	1	16	148	3	0	0	183
	Ratio	5.70%	0.00%	1.27%	0.63%	0.63%	8.86%	81.05%	1.90%	0.00%	0.00%	100%
Total		1038	679	303	1407	330	372	775	103	18	87	5111
Ratio		20.30%	13.28%	5.93%	27.53%	6.46%	7.28%	15.16%	2.01%	0.36%	1.70%	100%

Table 4.1.7 Composition Ratio by Vehicle Type on Workday*

Station	Type	Passenger Car	Taxi	Bus**	Truck***	Total
Qantara	Volume	659	464	170	1160	2453
	Ratio	26.88%	18.91%	6.92%	47.27%	100.0%
Ferdan	Volume	52	10	52	608	721
	Ratio	7.16%	1.36%	7.16%	84.27%	100.0%
No. 6	Volume	162	48	69	171	450
	Ratio	36.04%	10.68%	15.35%	38.04%	100.0%
Srabuom	Volume	102	9	19	507	636
	Ratio	16.00%	1.37%	2.99%	79.68%	100.0%
A.H. Tunnel	Volume	369	184	357	779	1689
	Ratio	21.83%	10.92%	21.14%	46.13%	100.0%
Shatt	Volume	13	0	4	238	255
	Ratio	5.25%	0.00%	1.43%	93.46%	100.0%
Total		1357	715	670	3463	6205
Ratio		21.87%	11.52%	10.80%	55.80%	100.0%

Note:

* Motor cycle, tractor and others are not included.

** Bus includes micro bus and large bus.

*** Truck includes light truck, heavy truck and van.

Table 4.1.8 Results of Traffic Count (1/12)

Qantara West to East Workday										Unit:	Vehicle
Type	Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Others	Subtotal
Time	Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle			
800-900	15	10	5	17	2	4	0	0	0	3	56
900-1000	10	7	0	11	2	2	0	0	0	0	32
1000-1100	27	8	3	19	2	6	0	0	1	1	67
1100-1200	25	21	5	27	3	18	0	1	0	0	100
1200-1300	17	17	1	20	0	8	0	0	0	0	63
1300-1400	16	10	3	12	3	6	0	1	0	0	51
1400-1500	5	11	3	10	2	9	0	0	0	1	41
1500-1600	13	17	2	26	0	8	0	0	0	1	67
1600-1700	22	13	2	27	2	8	0	2	0	0	76
1700-1800	16	13	0	15	5	3	0	0	0	0	52
1800-1900	11	21	1	25	3	14	0	1	0	0	76
1900-2000	12	11	5	22	0	8	0	0	0	0	58
2000-2100	11	9	1	18	0	11	0	0	0	0	50
2100-2200	4	4	3	10	0	6	0	0	0	1	28
Subtotal	204	172	34	259	24	111	0	5	1	7	817

Qantara East to West Workday										Unit:	Vehicle
Type	Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Others	Subtotal
Time	Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle			
800-900	6	3	3	15	1	4	0	0	0	2	34
900-1000	14	7	0	26	3	5	0	0	0	3	58
1000-1100	21	6	0	28	1	7	0	2	0	1	66
1100-1200	16	9	2	17	1	9	0	0	0	1	55
1200-1300	19	13	4	27	1	9	0	0	0	0	73
1300-1400	16	11	3	20	1	5	0	0	0	3	59
1400-1500	19	11	5	15	3	6	0	2	0	0	61
1500-1600	26	15	3	27	0	8	0	1	0	3	83
1600-1700	19	5	1	28	0	12	0	0	0	1	66
1700-1800	16	20	2	14	2	7	0	0	0	1	62
1800-1900	25	10	9	29	2	6	0	3	1	1	86
1900-2000	18	13	4	25	1	7	0	0	0	0	68
2000-2100	6	7	1	12	0	7	0	0	0	0	33
2100-2200	10	4	1	13	0	7	0	0	0	2	37
Subtotal	231	134	38	296	16	99	0	8	1	18	841

Qantara Total Workday										Unit:	Vehicle
Type	Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Others	Subtotal
Time	Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle			
800-900	21	13	8	32	3	8	0	0	0	5	90
900-1000	24	14	0	37	5	7	0	0	0	3	90
1000-1100	48	14	3	47	3	13	0	2	1	2	133
1100-1200	41	30	7	44	4	27	0	1	0	1	155
1200-1300	36	30	5	47	1	17	0	0	0	0	136
1300-1400	32	21	6	32	4	11	0	1	0	3	110
1400-1500	24	22	8	25	5	15	0	2	0	1	102
1500-1600	39	32	5	53	0	16	0	1	0	4	150
1600-1700	41	18	3	55	2	20	0	2	0	1	142
1700-1800	32	33	2	29	7	10	0	0	0	1	114
1800-1900	36	31	10	54	5	20	0	4	1	1	162
1900-2000	30	24	9	47	1	15	0	0	0	0	126
2000-2100	17	16	2	30	0	18	0	0	0	0	83
2100-2200	14	8	4	23	0	13	0	0	0	3	65
Total	435	306	72	555	40	210	0	13	2	25	1658

Table 4.1.8 Results of Traffic Count (2/12)

Qantar West to East		Holiday									Unit:	Vehicle
Type	Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Others	Subtotal	
Time	Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle				
800-900	12	6	1	14	5	6	0	0	0	11	55	
900-1000	8	6	2	11	5	3	0	0	0	1	36	
1000-1100	15	8	1	7	1	2	0	1	0	0	35	
1100-1200	12	14	2	20	1	3	0	2	0	0	51	
1200-1300	11	9	0	13	1	4	0	0	0	0	38	
1300-1400	13	13	1	12	1	5	0	1	0	0	46	
1400-1500	11	9	1	8	2	5	0	0	0	1	37	
1500-1600	18	16	3	33	0	5	0	1	0	0	76	
1600-1700	12	12	3	15	3	2	0	0	0	0	47	
1700-1800	16	17	5	27	2	1	0	0	0	0	68	
1800-1900	14	17	3	14	3	5	0	0	0	0	56	
1900-2000	14	8	2	17	1	7	0	0	0	0	49	
2000-2100	6	9	2	12	0	7	0	0	0	0	36	
2100-2200	4	6	1	10	0	5	0	0	0	0	26	
Subtotal	166	150	27	213	25	60	0	5	0	13	659	

Qantar East to West		Holiday									Unit:	Vehicle
Type	Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Others	Subtotal	
Time	Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle				
800-900	6	5	5	8	4	2	0	0	0	0	30	
900-1000	7	11	6	20	3	5	0	0	1	2	55	
1000-1100	15	12	4	21	2	4	0	0	0	3	61	
1100-1200	17	16	0	18	3	3	0	1	0	4	62	
1200-1300	12	7	0	11	1	3	0	1	0	1	36	
1300-1400	17	9	1	13	0	3	0	1	0	3	47	
1400-1500	18	12	5	12	1	8	0	0	0	0	56	
1500-1600	20	6	3	20	3	5	0	1	0	1	59	
1600-1700	12	11	5	14	4	7	0	0	0	0	53	
1700-1800	16	15	4	17	4	7	0	0	0	0	63	
1800-1900	10	14	1	27	2	7	0	0	0	0	61	
1900-2000	14	9	1	14	0	5	0	0	0	0	43	
2000-2100	15	14	1	9	3	3	0	0	0	0	45	
2100-2200	3	0	1	2	0	3	0	0	0	0	9	
Subtotal	182	141	37	206	30	65	0	4	1	14	680	

Qantar Total		Holiday									Unit:	Vehicle
Type	Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Others	Subtotal	
Time	Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle				
800-900	18	11	6	22	9	8	0	0	0	11	85	
900-1000	15	17	8	31	8	8	0	0	1	3	91	
1000-1100	30	20	5	28	3	6	0	1	0	3	96	
1100-1200	29	30	2	38	4	6	0	3	0	4	116	
1200-1300	23	16	0	24	2	7	0	1	0	1	74	
1300-1400	30	22	2	25	1	8	0	2	0	3	93	
1400-1500	29	21	6	20	3	13	0	0	0	1	93	
1500-1600	38	22	6	53	3	10	0	2	0	1	135	
1600-1700	24	23	8	29	7	9	0	0	0	0	100	
1700-1800	32	32	9	44	6	8	0	0	0	0	131	
1800-1900	24	31	4	41	5	12	0	0	0	0	117	
1900-2000	28	17	3	31	1	12	0	0	0	0	92	
2000-2100	21	23	3	21	3	10	0	0	0	0	81	
2100-2200	7	6	2	12	0	8	0	0	0	0	35	
Total	348	291	64	419	55	125	0	9	1	27	1339	

Table 4.1.8 Results of Traffic Count (3/12)

Time	Ferdan West to East Workday										Unit: Others	Vehicle Subtotal
	Type	Passenger Car	Taxi	Micro Bus	Van (Pick up)	Large Bus	Light Truck	Heavy Truck	Motor Cycle	Tractor		
800-900		2	0	2	0	4	0	6	0	0	0	14
900-1000		1	1	0	1	2	1	12	0	0	0	18
1000-1100		3	0	0	2	1	1	26	0	0	0	33
1100-1200		1	0	0	2	0	2	11	0	0	0	16
1200-1300		2	0	0	2	0	1	11	0	0	0	16
1300-1400		1	0	0	3	1	0	10	1	0	0	16
1400-1500		1	0	0	1	0	1	11	0	0	1	15
1500-1600		2	0	1	5	1	0	10	0	0	0	19
1600-1700		2	0	1	2	2	0	10	0	0	1	18
1700-1800		1	0	5	5	0	1	9	0	0	0	21
1800-1900		1	0	2	0	0	0	9	0	0	0	12
1900-2000		1	0	1	1	3	0	18	0	0	0	24
2000-2100		2	0	0	0	2	1	23	0	0	0	28
2100-2200		1	1	1	1	0	0	9	0	0	0	13
2200-2300		1	0	1	1	0	1	14	0	0	0	18
2300-2400		0	0	0	2	0	0	6	0	0	0	8
Subtotal		22	2	14	28	16	9	195	1	0	2	289

Time	Ferdan West to East Workday										Unit: Others	Vehicle Subtotal
	Type	Passenger Car	Taxi	Micro Bus	Van (Pick up)	Large Bus	Light Truck	Heavy Truck	Motor Cycle	Tractor		
800-900		0	1	0	2	1	0	15	0	0	0	19
900-1000		0	1	0	1	0	0	16	0	0	1	19
1000-1100		0	0	0	0	0	0	11	0	0	0	11
1100-1200		1	0	0	1	0	1	10	0	0	0	13
1200-1300		4	0	0	2	0	0	6	0	0	0	12
1300-1400		1	0	0	1	0	0	9	0	0	0	11
1400-1500		4	0	0	1	0	0	12	1	0	0	18
1500-1600		0	0	1	3	2	0	13	0	0	0	19
1600-1700		2	2	0	2	1	1	15	1	0	0	24
1700-1800		5	2	0	3	0	0	20	0	0	0	30
1800-1900		2	0	0	2	5	0	15	0	0	0	24
1900-2000		1	0	0	2	1	1	16	0	0	0	21
2000-2100		0	0	0	3	0	1	32	0	0	0	36
2100-2200		0	0	0	1	0	0	17	0	0	0	18
2200-2300		0	0	0	0	0	0	14	0	0	0	14
2300-2400		0	0	1	2	0	0	11	0	0	0	14
Subtotal		20	6	2	26	10	4	232	2	0	1	303

Time	Ferdan Total Workday										Unit: Others	Vehicle Subtotal
	Type	Passenger Car	Taxi	Micro Bus	Van (Pick up)	Large Bus	Light Truck	Heavy Truck	Motor Cycle	Tractor		
800-900		2	1	2	2	5	0	21	0	0	0	33
900-1000		1	2	0	2	2	1	28	0	0	1	37
1000-1100		3	0	0	2	1	1	37	0	0	0	44
1100-1200		2	0	0	3	0	3	21	0	0	0	29
1200-1300		6	0	0	4	0	1	17	0	0	0	28
1300-1400		2	0	0	4	1	0	19	1	0	0	27
1400-1500		5	0	0	2	0	1	23	1	0	1	33
1500-1600		2	0	2	8	3	0	23	0	0	0	38
1600-1700		4	2	1	4	3	1	25	1	0	1	42
1700-1800		6	2	5	8	0	1	29	0	0	0	51
1800-1900		3	0	2	2	5	0	24	0	0	0	36
1900-2000		2	0	1	3	4	1	34	0	0	0	45
2000-2100		2	0	0	3	2	2	55	0	0	0	64
2100-2200		1	1	1	2	0	0	26	0	0	0	31
2200-2300		1	0	1	1	0	1	28	0	0	0	32
2300-2400		0	0	1	4	0	0	17	0	0	0	22
Total		42	8	16	54	26	13	427	3	0	3	592

Table 4.1.8 Results of Traffic Count (4/12)

Time	Ferdan West to East Holiday										Unit: Others	Vehicle Subtotal
	Type	Passenger Car	Taxi	Micro Bus	Van (Pick up)	Large Bus	Light Truck	Heavy Truck	Motor Cycle	Tractor		
600-700		0	0	0	0	0	1	8	0	0	0	9
700-800		0	0	0	1	1	1	6	0	0	0	9
800-900		2	0	1	3	3	0	7	0	0	0	16
900-1000		1	0	0	1	2	0	9	0	0	0	13
1000-1100		1	2	0	2	1	0	6	0	0	1	13
1100-1200		0	1	0	0	0	0	2	0	0	0	3
1200-1300		1	0	1	6	0	1	7	0	0	0	16
1300-1400		1	1	0	1	1	0	6	0	0	0	10
1400-1500		0	0	0	2	0	0	3	0	0	0	5
1500-1600		2	0	0	1	0	0	7	0	0	2	12
1600-1700		2	1	0	1	0	1	6	1	1	0	13
1700-1800		0	0	0	1	0	0	5	0	0	0	6
1800-1900		0	0	0	2	1	0	14	0	0	0	17
1900-2000		1	0	0	0	0	0	10	0	0	0	11
2000-2100		1	0	0	0	0	0	10	0	0	0	11
2100-2200		1	0	0	0	0	0	10	0	0	0	11
2200-2300		0	0	1	3	0	0	9	0	0	0	13
2300-2400		1	0	2	0	0	0	7	0	0	0	10
Subtotal		14	5	5	24	9	4	132	1	1	3	198

Time	Ferdan West to East Holiday										Unit: Others	Vehicle Subtotal
	Type	Passenger Car	Taxi	Micro Bus	Van (Pick up)	Large Bus	Light Truck	Heavy Truck	Motor Cycle	Tractor		
600-700		0	0	0	0	0	0	4	0	0	0	4
700-800		0	0	0	0	0	0	11	0	0	0	11
800-900		0	0	0	1	0	0	4	0	0	0	5
900-1000		1	0	0	2	1	0	5	0	0	1	10
1000-1100		2	1	0	2	1	0	2	0	1	1	10
1100-1200		2	1	0	0	0	0	7	0	1	0	11
1200-1300		3	1	0	2	2	1	2	0	0	0	11
1300-1400		0	0	0	0	0	0	4	0	0	0	4
1400-1500		0	1	0	2	0	1	9	0	0	0	13
1500-1600		1	0	1	3	2	0	11	0	0	0	18
1600-1700		0	0	0	3	0	0	13	0	0	0	16
1700-1800		11	0	2	3	5	1	8	0	0	0	30
1800-1900		1	0	0	4	0	0	13	0	0	0	18
1900-2000		1	0	0	3	0	0	11	0	0	0	15
2000-2100		0	0	0	0	0	0	11	0	0	0	11
2100-2200		0	0	0	1	0	1	6	0	0	0	8
2200-2300		0	1	0	0	0	0	2	0	0	0	3
2300-2400		1	0	2	0	0	0	10	0	0	0	13
Subtotal		23	5	5	26	11	4	133	0	2	2	211

Time	Ferdan Total Holiday										Unit: Others	Vehicle Subtotal
	Type	Passenger Car	Taxi	Micro Bus	Van (Pick up)	Large Bus	Light Truck	Heavy Truck	Motor Cycle	Tractor		
600-700		0	0	0	0	0	1	12	0	0	0	13
700-800		0	0	0	1	1	1	17	0	0	0	20
800-900		2	0	1	4	3	0	11	0	0	0	21
900-1000		2	0	0	3	3	0	14	0	0	1	23
1000-1100		3	3	0	4	2	0	8	0	1	2	23
1100-1200		2	2	0	0	0	0	9	0	1	0	14
1200-1300		4	1	1	8	2	2	9	0	0	0	27
1300-1400		1	1	0	1	1	0	10	0	0	0	14
1400-1500		0	1	0	4	0	1	12	0	0	0	18
1500-1600		3	0	1	4	2	0	18	0	0	2	30
1600-1700		2	1	0	4	0	1	19	1	1	0	29
1700-1800		11	0	2	4	5	1	13	0	0	0	36
1800-1900		1	0	0	6	1	0	27	0	0	0	35
1900-2000		2	0	0	3	0	0	21	0	0	0	26
2000-2100		1	0	0	0	0	0	21	0	0	0	22
2100-2200		1	0	0	1	0	1	16	0	0	0	19
2200-2300		0	1	1	3	0	0	11	0	0	0	16
2300-2400		2	0	4	0	0	0	17	0	0	0	23
Subtotal		37	10	10	50	20	8	265	1	3	5	409

Table 4.1.8 Results of Traffic Count (5/12)

No.6 West to East Workday											Unit:	Vehicle
Time	Type	Passenger Car	Taxi	Micro Bus	Van (Pick up)	Large Bus	Light Truck	Heavy Truck	Motor Cycle	Tractor	Others	Subtotal
800-900		13	4	6	10	0	3	0	1	0	0	37
900-1000		5	1	1	9	0	0	0	1	0	0	17
1000-1100		16	2	5	6	2	0	0	0	0	1	32
1100-1200		16	1	1	6	0	0	0	0	0	0	24
1200-1300		5	2	2	6	2	0	0	0	0	0	17
1300-1400		2	1	1	4	0	1	0	0	0	0	9
1400-1500		12	5	2	4	1	0	0	0	0	0	24
1500-1600		4	3	2	5	2	0	0	2	0	0	18
1600-1700		4	0	10	4	0	0	0	0	0	0	18
1700-1800		2	2	0	3	0	0	0	0	0	0	7
1800-1900		3	0	1	1	0	1	0	0	0	0	6
1900-2000		0	1	2	6	0	1	0	0	0	0	10
2000-2100		3	0	1	0	0	0	0	0	0	0	4
2100-2200		0	0	0	0	0	0	0	0	0	0	0
Subtotal		85	22	34	64	7	6	0	4	0	1	223

No.6 East to West Workday											Unit:	Vehicle
Time	Type	Passenger Car	Taxi	Micro Bus	Van (Pick up)	Large Bus	Light Truck	Heavy Truck	Motor Cycle	Tractor	Others	Subtotal
800-900		3	1	4	3	0	1	0	0	0	0	12
900-1000		2	1	0	2	0	0	0	2	0	0	7
1000-1100		3	1	0	7	0	3	0	1	0	2	17
1100-1200		1	2	0	2	2	0	0	0	0	0	7
1200-1300		2	4	1	3	1	0	0	1	0	1	13
1300-1400		7	0	4	5	1	1	0	1	0	0	19
1400-1500		7	3	3	9	1	0	0	1	0	0	24
1500-1600		6	1	3	9	2	0	0	0	0	1	22
1600-1700		7	4	1	7	0	2	0	1	1	0	23
1700-1800		11	4	1	6	0	1	0	0	0	1	24
1800-1900		11	2	2	14	2	1	0	3	0	1	36
1900-2000		6	0	0	18	0	0	0	0	0	0	24
2000-2100		7	3	0	5	0	0	0	0	0	0	15
2100-2200		4	0	0	2	0	0	0	0	0	0	6
Subtotal		77	26	19	92	9	9	0	10	1	6	249

No.6 Total Workday											Unit:	Vehicle
Time	Type	Passenger Car	Taxi	Micro Bus	Van (Pick up)	Large Bus	Light Truck	Heavy Truck	Motor Cycle	Tractor	Others	Subtotal
800-900		16	5	10	13	0	4	0	1	0	0	49
900-1000		7	2	1	11	0	0	0	3	0	0	24
1000-1100		19	3	5	13	2	3	0	1	0	3	49
1100-1200		17	3	1	8	2	0	0	0	0	0	31
1200-1300		7	6	3	9	3	0	0	1	0	1	30
1300-1400		9	1	5	9	1	2	0	1	0	0	28
1400-1500		19	8	5	13	2	0	0	1	0	0	48
1500-1600		10	4	5	14	4	0	0	2	0	1	40
1600-1700		11	4	11	11	0	2	0	1	1	0	41
1700-1800		13	6	1	9	0	1	0	0	0	1	31
1800-1900		14	2	3	15	2	2	0	3	0	1	42
1900-2000		6	1	2	24	0	1	0	0	0	0	34
2000-2100		10	3	1	5	0	0	0	0	0	0	19
2100-2200		4	0	0	2	0	0	0	0	0	0	6
Total		162	48	53	156	16	15	0	14	1	7	472

Table 4.1.8 Results of Traffic Count (6/12)

No.6 West to East Holiday											Unit:	Vehicle
Type	Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Others	Subtotal	
Time	Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle				
800-900	6	2	2	7	0	0	0	2	1	0	20	
900-1000	5	3	5	0	1	1	0	1	0	1	17	
1000-1100	9	5	1	19	1	1	0	2	0	2	40	
1100-1200	4	1	1	9	2	0	0	1	0	0	18	
1200-1300	7	5	2	6	1	0	0	4	0	0	25	
1300-1400	8	1	1	0	0	1	0	1	0	0	12	
1400-1500	13	3	1	9	4	0	0	1	0	3	34	
1500-1600	8	1	0	5	1	0	0	0	0	1	16	
1600-1700	7	1	0	1	0	0	0	0	0	1	10	
1700-1800	2	0	1	4	0	0	0	0	0	1	8	
1800-1900	4	0	0	5	0	0	0	1	0	0	10	
1900-2000	1	2	1	5	0	1	0	1	0	0	11	
2000-2100	2	1	7	10	0	1	0	0	0	0	21	
2100-2200	0	0	0	0	0	0	0	0	0	0	0	
Subtotal	76	25	22	80	10	5	0	14	1	9	242	

No.6 East to West Holiday											Unit:	Vehicle
Type	Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Others	Subtotal	
Time	Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle				
800-900	0	4	4	4	0	0	0	0	0	0	12	
900-1000	0	1	1	4	1	0	0	1	0	0	8	
1000-1100	1	1	0	1	0	0	0	0	0	0	3	
1100-1200	3	3	0	4	0	0	0	0	0	0	10	
1200-1300	5	2	1	7	0	0	0	3	0	5	23	
1300-1400	1	3	0	1	1	1	0	0	0	0	7	
1400-1500	6	1	1	3	1	1	0	4	0	3	20	
1500-1600	12	5	1	10	0	1	0	1	0	10	40	
1600-1700	8	4	1	7	1	0	0	0	0	1	22	
1700-1800	11	3	1	6	2	0	0	2	0	4	29	
1800-1900	9	1	2	6	0	1	0	1	0	1	21	
1900-2000	4	1	1	7	0	0	0	0	0	1	14	
2000-2100	3	1	0	3	0	0	0	0	0	0	7	
2100-2200	0	0	0	0	0	0	0	1	0	0	1	
Subtotal	63	39	13	63	6	4	0	13	0	25	217	

No.6 Total Workday											Unit:	Vehicle
Type	Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Others	Subtotal	
Time	Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle				
800-900	6	6	6	11	0	0	0	2	1	0	32	
900-1000	5	4	6	4	2	1	0	2	0	1	25	
1000-1100	10	6	1	20	1	1	0	2	0	2	43	
1100-1200	7	4	1	13	2	0	0	1	0	0	28	
1200-1300	12	7	3	13	1	0	0	7	0	5	48	
1300-1400	9	4	1	1	1	2	0	1	0	0	19	
1400-1500	19	4	2	12	5	1	0	5	0	6	54	
1500-1600	20	6	1	15	1	1	0	1	0	11	56	
1600-1700	15	5	1	8	1	0	0	0	0	2	32	
1700-1800	13	3	2	10	2	0	0	2	0	5	37	
1800-1900	13	1	2	11	0	1	0	2	0	1	31	
1900-2000	5	3	2	12	0	1	0	1	0	1	25	
2000-2100	5	2	7	13	0	1	0	0	0	0	28	
2100-2200	0	0	0	0	0	0	0	1	0	0	1	
Total	139	55	35	143	16	9	0	27	1	31	459	

Table 4.1.8 Results of Traffic Count (9/12)

A.H.Tunnel		Workday									Unit:	Vehicle
West to East		Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Others	Subtotal
Time	Type	Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle			
500-600		2	0	2	1	0	3	8	0	0	0	16
600-700		8	2	2	5	3	1	8	0	0	0	29
700-900		9	5	4	5	4	1	5	0	0	0	33
800-900		16	4	3	12	3	6	9	0	0	1	54
900-1000		16	8	6	8	1	4	10	0	0	0	53
1000-1100		11	8	5	9	5	7	11	0	0	0	56
1100-1200		15	5	4	7	4	5	4	0	0	0	41
1200-1300		13	7	1	6	5	5	5	0	0	0	42
1300-1400		16	7	10	7	2	6	8	0	0	0	56
1400-1500		12	3	2	5	3	2	8	0	0	0	35
1500-1600		12	4	4	3	4	5	12	0	0	0	44
1600-1700		5	11	9	12	6	5	12	0	0	0	60
1700-1800		4	2	3	4	5	7	1	0	0	0	28
1800-1900		8	4	7	8	4	7	2	0	0	0	40
1900-2000		2	1	6	5	4	6	11	0	0	0	35
2000-2100		6	2	5	4	4	3	1	0	0	0	25
2100-2200		3	3	4	2	2	7	5	0	0	0	26
2200-2300		3	2	3	2	2	3	2	0	0	0	17
2300-2400		5	3	6	3	5	4	3	0	0	0	29
2400-100		3	1	0	3	5	7	1	0	0	0	20
100-200		1	1	4	4	4	1	1	0	0	0	16
200-300		5	2	3	0	4	2	0	0	0	0	16
300-400		0	0	4	0	2	3	1	0	0	0	10
400-500		1	0	0	1	0	0	1	0	0	0	3
Subtotal		176	85	97	116	81	100	131	0	0	1	787

A.H.Tunnel		Workday									Unit:	Vehicle
East to West		Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Others	Subtotal
Time	Type	Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle			
500-600		2	0	7	1	3	1	1	0	0	0	15
600-700		2	0	3	0	1	1	2	0	0	0	9
700-900		6	0	5	4	0	3	2	0	0	0	20
800-900		6	2	3	1	0	2	1	0	0	0	15
900-1000		8	5	0	2	1	0	11	0	0	0	27
1000-1100		3	3	3	7	2	1	11	0	0	0	33
1100-1200		5	2	4	5	3	1	15	0	0	0	35
1200-1300		6	3	2	6	2	3	2	0	0	0	24
1300-1400		8	5	3	7	3	6	11	0	0	0	43
1400-1500		3	2	2	4	6	5	5	0	0	0	27
1500-1600		20	6	1	6	1	4	9	0	0	0	47
1600-1700		24	9	8	9	6	5	6	0	0	0	67
1700-1800		16	6	3	5	4	6	10	0	0	0	50
1800-1900		12	8	2	13	2	8	15	0	0	0	60
1900-2000		4	5	0	4	4	5	9	0	0	0	31
2000-2100		3	2	5	3	0	5	7	0	0	0	25
2100-2200		2	3	4	4	1	7	12	0	0	0	33
2200-2300		3	1	2	5	0	5	7	0	0	0	23
2300-2400		2	3	3	3	0	1	5	0	0	0	17
2400-100		4	2	1	3	0	2	4	0	0	0	16
100-200		0	1	4	1	5	2	2	0	0	0	15
200-300		0	1	4	0	5	2	0	0	0	0	12
300-400		2	0	5	3	5	1	2	0	0	0	18
400-500		1	5	0	1	2	0	0	0	0	0	9
Subtotal		142	74	74	97	56	76	152	0	0	0	671

A.H.Tunnel		Workday									Unit:	Vehicle
Total		Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Others	Subtotal
Time	Type	Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle			
500-600		4	0	9	2	3	4	9	0	0	0	31
600-700		10	2	5	5	4	2	10	0	0	0	38
700-900		15	5	9	9	4	4	7	0	0	0	53
800-900		22	6	6	13	3	8	10	0	0	1	69
900-1000		24	13	6	10	2	4	21	0	0	0	80
1000-1100		14	11	8	16	7	8	25	0	0	0	89
1100-1200		20	7	8	12	7	6	19	0	0	0	79
1200-1300		19	10	3	12	7	8	7	0	0	0	66
1300-1400		24	12	13	14	5	12	19	0	0	0	99
1400-1500		15	5	4	9	9	7	13	0	0	0	62
1500-1600		32	10	5	9	5	9	21	0	0	0	91
1600-1700		29	20	17	21	12	10	18	0	0	0	127
1700-1800		20	8	6	9	9	13	13	0	0	0	78
1800-1900		20	12	9	21	6	15	17	0	0	0	100
1900-2000		6	6	6	9	8	11	20	0	0	0	66
2000-2100		9	4	10	7	1	8	8	0	0	0	50
2100-2200		5	6	8	6	3	11	17	0	0	0	59
2200-2300		6	3	5	7	2	8	9	0	0	0	40
2300-2400		7	6	9	6	5	5	8	0	0	0	46
2400-100		7	3	1	6	5	9	5	0	0	0	36
100-200		1	2	8	5	9	3	3	0	0	0	31
200-300		5	3	7	0	9	4	0	0	0	0	28
300-400		2	0	9	3	7	4	3	0	0	0	28
400-500		2	5	0	2	2	0	1	0	0	0	12
Total		318	139	171	213	137	176	283	0	0	1	1458

Table 4.1.8 Results of Traffic Count (10/12)

A.H.Tunnel West to East		Holiday								Unit	Vehicle	
Time	Type	Passenger Car	Taxi	Micro Bus	Van (Pick up)	Large Bus	Light Truck	Heavy Truck	Motor Cycle	Tractor	Others	Subtotal
500-600		2	1	3	2	0	1	5	0	0	0	11
600-700		3	2	0	3	0	2	5	0	0	0	15
700-900		6	2	2	6	4	1	4	0	0	0	27
800-900		6	4	2	1	3	4	0	0	0	0	20
900-1000		10	6	2	7	0	2	9	0	0	0	36
1000-1100		22	2	6	0	12	3	6	0	0	0	51
1100-1200		11	4	1	7	13	3	9	0	0	0	48
1200-1300		12	9	3	5	3	1	11	0	0	0	41
1300-1400		9	4	5	3	2	5	4	0	0	0	32
1400-1500		10	5	3	6	2	1	5	0	0	0	32
1500-1600		10	6	5	10	9	0	5	0	0	0	45
1600-1700		8	8	4	5	6	2	5	0	0	0	38
1700-1800		4	5	8	3	5	3	2	0	0	0	30
1800-1900		3	7	2	3	4	4	1	0	0	0	24
1900-2000		7	5	2	5	3	2	9	0	0	0	33
2000-2100		7	5	4	4	3	1	11	0	0	0	35
2100-2200		3	3	3	2	0	0	3	0	0	0	14
2200-2300		3	0	4	11	0	4	4	0	0	0	26
2300-2400		1	1	3	2	3	3	1	0	0	0	14
2400-100		0	2	5	1	4	0	3	0	0	0	15
100-200		2	1	3	2	5	4	2	0	0	0	19
200-300		1	0	5	2	3	1	3	0	0	0	15
300-400		0	2	3	0	1	1	1	0	0	0	8
400-500		0	0	0	0	3	0	1	0	0	0	4
Subtotal		140	84	78	90	88	50	109	0	0	0	639

A.H.Tunnel East to West		Holiday								Unit	Vehicle	
Time	Type	Passenger Car	Taxi	Micro Bus	Van (Pick up)	Large Bus	Light Truck	Heavy Truck	Motor Cycle	Tractor	Others	Subtotal
500-600		1	3	2	5	7	1	5	0	0	0	24
600-700		0	3	3	0	3	4	2	0	0	0	15
700-900		0	2	2	1	6	1	1	0	0	0	13
800-900		0	1	2	1	7	0	5	0	0	0	16
900-1000		1	1	3	2	7	5	19	0	0	0	38
1000-1100		5	5	0	5	9	1	5	0	0	0	30
1100-1200		1	5	0	5	6	1	11	0	0	0	32
1200-1300		9	3	5	5	5	3	9	0	0	0	39
1300-1400		6	3	1	2	3	0	2	5	0	0	22
1400-1500		6	2	2	7	1	6	3	0	0	0	27
1500-1600		8	4	2	3	3	0	10	0	0	0	30
1600-1700		6	3	4	7	4	2	2	0	0	0	28
1700-1800		9	7	6	7	1	1	6	0	0	0	37
1800-1900		11	9	4	9	10	7	9	0	0	0	59
1900-2000		13	3	2	6	9	9	9	0	0	0	51
2000-2100		11	3	1	9	9	1	7	0	0	0	41
2100-2200		7	4	1	6	0	4	9	0	0	0	31
2200-2300		2	1	2	3	2	2	3	0	0	0	15
2300-2400		1	3	3	2	1	4	5	0	0	0	19
2400-100		4	3	2	5	1	2	4	0	0	0	21
100-200		2	1	1	3	0	4	7	0	0	0	18
200-300		1	2	6	4	1	4	4	0	0	0	22
300-400		0	1	3	3	1	1	4	0	0	0	13
400-500		2	0	4	2	3	2	1	0	0	0	18
Subtotal		106	72	61	102	99	65	145	5	0	0	655

A.H.Tunnel Total		Holiday								Unit	Vehicle	
Time	Type	Passenger Car	Taxi	Micro Bus	Van (Pick up)	Large Bus	Light Truck	Heavy Truck	Motor Cycle	Tractor	Others	Subtotal
500-600		3	4	5	7	7	2	10	0	0	0	38
600-700		3	5	3	3	3	6	7	0	0	0	30
700-900		6	4	4	7	10	4	5	0	0	0	40
800-900		6	5	4	2	10	4	5	0	0	0	36
900-1000		11	7	5	9	7	7	28	0	0	0	74
1000-1100		27	7	6	5	21	4	11	0	0	0	81
1100-1200		12	9	1	12	19	4	21	0	0	0	80
1200-1300		21	12	8	10	8	4	20	0	0	0	83
1300-1400		15	7	6	5	5	5	6	5	0	0	54
1400-1500		16	7	5	13	3	7	8	0	0	0	59
1500-1600		18	10	7	13	12	0	15	0	0	0	75
1600-1700		14	11	8	12	10	4	7	0	0	0	66
1700-1800		13	12	14	10	6	4	8	0	0	0	67
1800-1900		14	16	6	12	14	11	10	0	0	0	83
1900-2000		20	8	4	11	12	11	18	0	0	0	84
2000-2100		18	8	5	13	12	2	18	0	0	0	76
2100-2200		10	7	4	8	0	4	12	0	0	0	45
2200-2300		5	1	6	14	2	6	7	0	0	0	41
2300-2400		2	4	6	4	4	7	6	0	0	0	33
2400-100		4	5	7	6	5	2	7	0	0	0	36
100-200		4	2	4	5	5	8	9	0	0	0	37
200-300		2	2	11	6	4	5	7	0	0	0	37
300-400		0	3	6	3	2	2	5	0	0	0	21
400-500		2	0	4	2	6	2	2	0	0	0	18
Total		246	156	139	192	187	115	254	5	0	0	1294

Table 4.1.8 Results of Traffic Count (11/12)

Shatt West to East Workday												
Time	Type	Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Unit: Others	Vehicle Subtotal
		Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle			
500-600		0	0	0	0	0	0	4	0	0	0	4
600-700		1	0	0	0	0	0	12	1	0	1	15
700-800		0	0	0	0	0	1	9	0	0	0	10
800-900		0	0	0	0	0	0	6	0	0	0	6
900-1000		0	0	0	0	0	1	7	0	0	0	8
1000-1100		0	0	0	0	0	0	9	0	0	0	9
1100-1200		0	0	1	0	0	0	14	0	0	0	15
1200-1300		2	0	1	3	0	0	10	0	0	0	16
1300-1400		1	0	0	1	0	0	13	0	0	1	16
1400-1500		0	0	0	0	0	0	9	0	0	0	9
1500-1600		0	0	0	1	0	1	8	0	0	0	10
1600-1700		0	0	0	2	0	1	8	0	0	0	11
Subtotal		4	0	2	7	0	4	109	1	0	2	129

Shatt est to East Workday												
Time	Type	Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Unit: Others	Vehicle Subtotal
		Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle			
500-600		1	0	0	0	0	0	4	0	0	0	5
600-700		0	0	0	0	0	1	9	0	0	0	10
700-800		0	0	0	0	0	0	4	0	0	1	5
800-900		0	0	0	0	0	0	5	0	0	0	5
900-1000		1	0	0	1	0	0	6	0	0	0	8
1000-1100		2	0	0	1	0	0	5	0	0	0	8
1100-1200		1	0	0	0	0	0	4	0	0	0	5
1200-1300		0	0	1	2	0	0	6	0	0	0	9
1300-1400		1	0	0	0	0	0	9	0	0	0	10
1400-1500		0	0	0	1	0	1	3	1	0	0	6
1500-1600		0	0	0	0	0	0	4	0	0	0	4
1600-1700		1	0	0	1	0	0	9	0	0	0	11
Subtotal		7	0	1	6	0	2	68	1	0	1	86

Shatt est to East Workday												
Time	Type	Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Unit: Others	Vehicle Subtotal
		Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle			
500-600		1	0	0	0	0	0	8	0	0	0	9
600-700		1	0	0	0	0	1	21	1	0	1	25
700-800		0	0	0	0	0	1	13	0	0	1	15
800-900		0	0	0	0	0	0	11	0	0	0	11
900-1000		1	0	0	1	0	1	13	0	0	0	16
1000-1100		2	0	0	1	0	0	14	0	0	0	17
1100-1200		1	0	1	0	0	0	18	0	0	0	20
1200-1300		2	0	2	5	0	0	16	0	0	0	25
1300-1400		2	0	0	1	0	0	22	0	0	1	26
1400-1500		0	0	0	1	0	1	12	1	0	0	15
1500-1600		0	0	0	1	0	1	12	0	0	0	14
1600-1700		1	0	0	3	0	1	17	0	0	0	22
Total		11	0	3	13	0	6	177	2	0	3	215

Table 4.1.8 Results of Traffic Count (12/12)

Shatt West to East		Holiday									Unit:	Vehicle
Type	Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Others	Subtotal	
Time	Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle				
500-600	0	0	0	0	0	0	0	0	0	0	0	
600-700	0	0	0	0	0	1	12	0	0	0	13	
700-800	0	0	0	0	0	0	7	0	0	0	7	
800-900	0	0	0	0	0	2	10	0	0	0	12	
900-1000	0	0	0	0	0	0	5	0	0	0	5	
1000-1100	0	0	0	0	0	0	7	0	0	0	7	
1100-1200	0	0	0	0	0	0	5	1	0	0	6	
1200-1300	0	0	1	0	0	0	3	0	0	0	4	
1300-1400	0	0	0	0	0	1	3	0	0	0	4	
1400-1500	0	0	0	0	0	0	6	0	0	0	6	
1500-1600	2	0	0	1	0	0	2	1	0	0	6	
1600-1700	0	0	0	0	0	0	5	0	0	0	5	
Subtotal	2	0	1	1	0	4	65	2	0	0	75	

Shatt est to East		Holiday									Unit:	Vehicle
Type	Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Others	Subtotal	
Time	Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle				
500-600	0	0	0	0	0	0	0	0	0	0	0	
600-700	0	0	0	0	1	0	10	0	0	0	11	
700-800	0	0	0	0	0	1	7	0	0	0	8	
800-900	0	0	1	0	0	0	3	0	0	0	4	
900-1000	2	0	0	0	0	0	5	0	0	0	7	
1000-1100	1	0	0	0	0	0	12	0	0	0	13	
1100-1200	1	0	0	0	0	2	4	0	0	0	7	
1200-1300	1	0	0	0	0	1	4	0	0	0	6	
1300-1400	0	0	0	0	0	1	2	1	0	0	4	
1400-1500	2	0	0	0	0	0	7	0	0	0	9	
1500-1600	0	0	0	0	0	1	3	0	0	0	4	
1600-1700	0	0	0	0	0	4	6	0	0	0	10	
Subtotal	7	0	1	0	1	10	63	1	0	0	83	

Shatt est to East		Holiday									Unit:	Vehicle
Type	Passenger	Taxi	Micro	Van	Large	Light	Heavy	Motor	Tractor	Others	Subtotal	
Time	Car		Bus	(Pick up)	Bus	Truck	Truck	Cycle				
500-600	0	0	0	0	0	0	0	0	0	0	0	
600-700	0	0	0	0	1	1	22	0	0	0	24	
700-800	0	0	0	0	0	1	14	0	0	0	15	
800-900	0	0	1	0	0	2	13	0	0	0	16	
900-1000	2	0	0	0	0	0	10	0	0	0	12	
1000-1100	1	0	0	0	0	0	19	0	0	0	20	
1100-1200	1	0	0	0	0	2	9	1	0	0	13	
1200-1300	1	0	1	0	0	1	7	0	0	0	10	
1300-1400	0	0	0	0	0	2	5	1	0	0	8	
1400-1500	2	0	0	0	0	0	13	0	0	0	15	
1500-1600	2	0	0	1	0	1	5	1	0	0	10	
1600-1700	0	0	0	0	0	4	11	0	0	0	15	
Total	9	0	2	1	1	14	128	3	0	0	158	