

## รายการอ้างอิง

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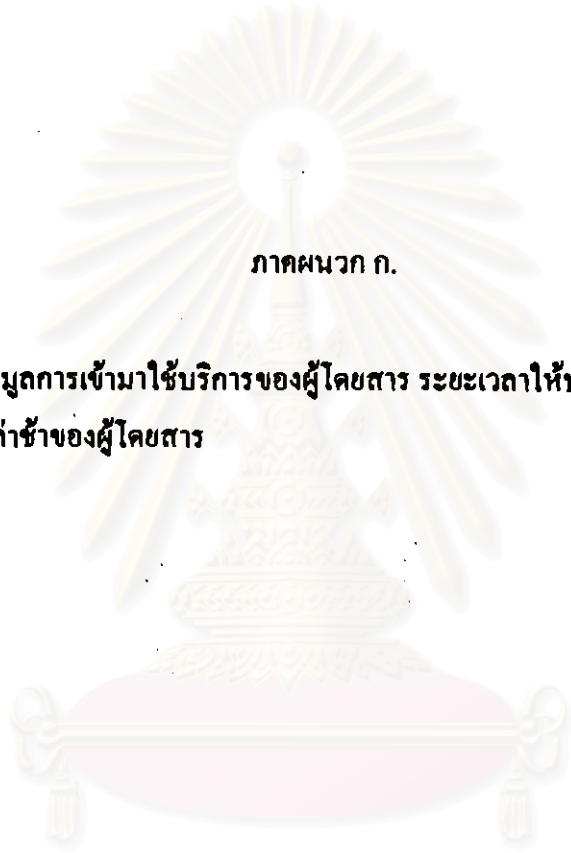
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สถาบันวิทยบริการ  
จุฬาลงกรณ์มหาวิทยาลัย



ภาคผนวก

สถาบันวิทยบริการ  
จุฬาลงกรณ์มหาวิทยาลัย



ภาคผนวก ก.

การเก็บข้อมูลการเข้ามาใช้บริการของผู้โดยสาร ระยะเวลาให้บริการ  
และความล่าช้าของผู้โดยสาร

สถาบันวิทยบริการ  
จุฬาลงกรณ์มหาวิทยาลัย

ตารางที่ ก.1 การเข้ามาใช้บริการของผู้โดยสาร ณ บริเวณเคาน์เตอร์ตรวจตั๋ว และสัมภาระ เที่ยวบิน BA 010

### Check in

Date : Mar 1, 98

Schedule Flight : 2345

Flight : BA010

Aircraft Type : B 744

From : Bangkok To London

Bay No : 32

	Arrived Time				Arrived Time				Arrived Time				Arrived Time				Arrived Time			
	Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec	
1	19	50	10	36		27	71		9	106		20	141		22	5				
2			10	37		50	72		49	24	107		23	142			12			
3			10	38		50	73			43	108		4	11	143		23	15		
4			10	39		33	10	74		50	14	109			14	144			50	
5		59	10	40			10	75			16	110			56	145		24	20	
6	20	3	25	41			40	76		51	1	111		5	15	146		25	40	
7			35	42			40	77			3	112			20	147		29	5	
8			37	43		34	25	78		52	1	113		6	44	148			50	
9			37	44			59	79			5	114			7	30	149		31	16
10			37	45		36	39	80		53	30	115			8	36	150			20
11		6	20	46			39	81		54	4	116			9	12	151		33	25
12		9	52	47			37	25	82			10	117		10	17	152		34	22
13		12	40	48			28	83			13	118			23	153				58
14		14	43	49			30	84			29	119			25	154		35	3	
15		17	23	50			30	85			40	120			27	155		36	26	
16			26	51		39	30	86		55	43	121			11	16	156			33
17			30	52			30	87			45	122			12	24	157		36	49
18			30	53		40	34	88		56	36	123			13	4	158			52
19			30	54		41	25	89			42	124			13	56	159			56
20		19	1	55			31	90			59	125			14	7	160		37	19
21			25	56		42	54	91		57	2	126			15	1	161			25
22		22	50	57			56	92			4	127				15	162			32
23			50	58		43	6	93			34	128				15	163			40
24		23	1	59			10	94			40	129			16	30	164			43
25			1	60			30	95		59	51	130			17	35	165			56
26			1	61			56	96			57	131				35	166			59
27		24	30	62			58	97	21	1	14	132				50	167		38	46
28			30	63		45	13	98		2	0	133			18	30	168			52
29		25	50	64			13	99			0	134				37	169			59
30		26	10	65			25	100			29	135				40	170		39	11
31		27	39	66			27	101			31	136			19	29	171			18
32		31	25	67		46	37	102		3	1	137				58	172		40	2
33		32	22	68		47	45	103			5	138			20	0	173			5
34			22	69			47	104			7	139				45	174		41	36
35			27	70		48	3	105			8	140				50	175		42	19

ตารางที่ ก.1 (ต่อ)

## Check in

Date : Mar 1 ,98

Flight : BA010

From : Bangkok To London

Schedule Flight : 2345

Aircraft Type : B 744

Bay No : 32

	Arrived Time				Arrived Time				Arrived Time				Arrived Time				Arrived Time		
	Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec
176			23	211			25	246		3	40	281		17	3	316			40
177			26	212			32	247		4	4	282			8	317		41	30
178			29	213			40	248			9	283			35	318		42	50
179			35	214			45	249			24	284		18	0	319		45	5
180			54	215			54	250		5	20	285			40	320			15
181			56	216		54	35	251			24	286			50	321		46	5
182			59	217		55	25	252			28	287		19	1	322		50	7
183		43	2	218			48	253		6	19	288			10	323			13
184		44	24	219		56	0	254			24	289			44	324			39
185			27	220			9	255			32	290			49	325			58
186			32	221			30	256			41	291		20	50	326		51	30
187			40	222			30	257		7	7	292			55	327		52	5
188		45	7	223			37	258			25	293		21	21	328			53
189			23	224			40	259			49	294			27	329			59
190			47	225			59	260			52	295		25	15	330		53	9
191			52	226		57	5	261		8	19	296		27	55	331			17
192			55	227		58	7	262		9	41	297		28	45	332		54	35
193			57	228			10	263			45	298		29	30	333			40
194		46	52	229		59	50	264		11	19	299		31	0	334			50
195			56	230		22	0	265			25	300		32	20	335		55	35
196		47	20	231			46	266			32	301			30	336			49
197			24	232			53	267			32	302		34	30	337			58
198		48	5	233			56	268			47	303		35	20	338			
199			9	234			59	269			53	304		36	50	339			
200			15	235		1	3	270		12	49	305			55	340			
201		49	25	236			13	271			55	306			57	341			
202			50	237			35	272			55	307		37	0	342			
203			53	238			40	273			55	308			15	343			
204			57	239		2	14	274			58	309			50	344			
205		50	28	240			17	275		13	36	310			50	345			
206			34	241			20	276			39	311			50	346			
207		51	33	242			25	277			44	312			50	347			
208			52	243			28	278			56	313		38	45	348			
209			55	244			35	279		14	20	314			53	349			
210		53	10	245			40	280			23	315		39	15	350			



ตารางที่ ก.2 การเข้ามาใช้บริการของผู้โดยสาร ณ บริเวณเคาน์เตอร์ตรวจตั๋ว และสัมภาระ เที่ยวบิน LH 773

### Check In

Date : Mar 1 ,98

Flight : LH773

From : Bangkok To Frankfurt

Schedule Flight : 2345

Aircraft Type : B 744

Bay No : 15

	Arrived Time				Arrived Time				Arrived Time				Arrived Time				Arrived Time		
	Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec
1	19	46	0	36		34	12	71		49	32	106		19	4	141		45	5
2			0	37			12	72			32	107			4	142			28
3			0	38			12	73			32	108			4	143		46	39
4			0	39			12	74		32	38	109		20	4	144		47	43
5		48	27	40			12	75		54	3	110			4	145		49	28
6			27	41			12	76			58	111		23	30	146			51
7		51	8	42			12	77			58	112			30	147		50	23
8			8	43			12	78		56	47	113			57	148		52	17
9		52	11	44			12	79		59	0	114			57	149			17
10			22	45			51	80			32	115		24	54	150			17
11	20	2	27	46			51	81	21	0	8	116			54	151			17
12			27	47		35	20	82			42	117		26	54	152		53	25
13			27	48			36	83			42	118			54	153		54	32
14		3	13	49		36	4	84		1	55	119		27	36	154			32
15			13	50		37	43	85			55	120		28	2	155		55	48
16		7	18	51			43	86		2	26	121			2	156		56	6
17		9	8	52		38	24	87		3	26	122		30	30	157			6
18			55	53		40	4	88			26	123		32	13	158			26
19			55	54			4	89		4	3	124			13	159		38	7
20		13	7	55		41	4	90			3	125		33	2	160	22	2	36
21			56	56			4	91			28	126		34	52	161			36
22			56	57		42	9	92			28	127			52	162			36
23		14	42	58		44	51	93		5	57	128		35	29	163		3	54
24			42	59			51	94			57	129		38	28	164			54
25		15	8	60		46	4	95		7	4	130			28	165			54
26		18	33	61			4	96			4	131			59	166			54
27		22	42	62			4	97			31	132			59	167			54
28		23	20	63			45	98		9	26	133			59	168			54
29			20	64			45	99		13	7	134			59	169		4	15
30			27	65			45	100			45	135		39	38	170		5	34
31			27	66			45	101		14	8	136		40	5	171		9	45
32			27	67			45	102			48	137			5	172		10	8
33		29	45	68		47	21	103			48	138			25	173			45
34		30	12	69			21	104			48	139		44	48	174			45
35		31	49	70			42	105		15	47	140			48	175		12	13

ตารางที่ ก. 2 (ต่อ)

## Check in

Date : Mar 1 ,98

Flight : LH773

From : Bangkok To Frankfurt

Schedule Flight : 2345

Aircraft Type : B 744

Bay No : 15

	Arrived Time				Arrived Time				Arrived Time				Arrived Time				Arrived Time		
	Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec
176		13	12	211			44	246				281				316			
177			12	212		30	23	247				282				317			
178			12	213		31	15	248				283				318			
179			12	214			52	249				284				319			
180			12	215		34	6	250				285				320			
181			12	216		35	9	251				286				321			
182			12	217		36	21	252				287				322			
183			12	218		38	19	253				288				323			
184			12	219			19	254				289				324			
185			12	220			19	255				290				325			
186			12	221			19	256				291				326			
187			12	222		46	5	257				292				327			
188			12	223		49	31	258				293				328			
189			12	224			31	259				294				329			
190			12	225			31	260				295				330			
191			12	226			31	261				296				331			
192			12	227			31	262				297				332			
193			12	228			31	263				298				333			
194			12	229			31	264				299				334			
195			50	230			31	265				300				335			
196		16	14	231			31	266				301				336			
197		18	31	232			31	267				302				337			
198			31	233			52	2	268			303				338			
199			31	234				2	269			304				339			
200			48	235			54	43	270			305				340			
201			48	236	23	4	48	271				306				341			
202		21	37	237				48	272			307				342			
203			37	238		12	11	273				308				343			
204		23	45	239				11	274			309				344			
205			45	240				11	275			310				345			
206		24	13	241				11	276			311				346			
207			29	242		18	4	277				312				347			
208		25	25	243					278			313				348			
209		28	8	244					279			314				349			
210		29	44	245					280			315				350			

ตารางที่ ก.3 การเข้ามาใช้บริการของผู้โดยสาร ณ บริเวณเคาน์เตอร์ตรวจตั๋ว และสัมภาระ เที่ยวบิน KL 878

### Check in

Date : Mar 1 ,98

Flight : KL 878

From : Bangkok To Amsterdam

Schedule Flight : 2340

Aircraft Type : B 744

Bay No : 42

	Arrived Time				Arrived Time				Arrived Time				Arrived Time				Arrived Time		
	Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec
1	19	30	20	36		46	71		15	20	106		35	141		46	34		
2			40	37		53	72			37	107	32	10	142			56		
3			44	38		53	73			45	108		25	143			58		
4			45	39		53	74			55	109		50	144	47		15		
5		31	50	40		15	75			56	110	33	55	145			16		
6		32	15	41		15	76		16	15	111	34	10	146			28		
7		35	25	42		46	77			55	112		11	147			51		
8		39	40	43		55	78		17	12	113		12	148			57		
9		40	35	44		55	79			12	114		40	149	48		25		
10			55	45		31	80			30	115		40	150			55		
11		43	0	46		56	81		20	30	116		41	151			57		
12			30	47		32	82			35	117		41	152	49		8		
13			30	48		44	83			40	118	35	29	153			34		
14			31	49		57	84		22	10	119		39	154		50	34		
15			31	50		57	85		23	55	120	36	15	155			34		
16			45	51		40	86		24	10	121		16	156	51		35		
17			46	52		40	87			40	122		30	157			35		
18			56	53		40	88			55	123	37	20	158	52		16		
19		44	30	54		40	89			58	124		25	159			17		
20			30	55		53	90		25	1	125		26	160			17		
21			30	56		59	91			3	126		26	161			30		
22			31	57		11	92			35	127	38	40	162			30		
23			31	58		35	93			45	128		41	163	53		31		
24			45	59		35	94		27	25	129		42	164			42		
25			46	60	20	1	95			25	130		55	165			55		
26		46	5	61		2	96		28	10	131	39	23	166			56		
27			17	62		50	97		29	35	132	40	12	167			58		
28			17	63		50	98			36	133		40	168	54		15		
29		49	30	64		5	99			59	134		55	169			50		
30			32	65		8	100		30	27	135	41	58	170			50		
31			33	66		6	101			31	136	42	9	171			50		
32		50	55	67		9	102			32	137		17	172			50		
33		51	29	68		12	103			58	138		18	173			51		
34			30	69		13	104			59	139	43	32	174			58		
35		52	40	70		14	105		31	34	140	44	32	175			59		

ตารางที่ ก.3 (ต่อ)

## Check in

Date : Mar 1 ,98

Flight : KL 878

From : Bangkok To Amsterdam

Schedule Flight : 2340

Aircraft Type : B 744

Bay No : 42

	Arrived Time				Arrived Time				Arrived Time				Arrived Time				Arrived Time		
	Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec
176		55	54	211		23	8	246			56	281		40	30	316			
177			55	212			12	247			57	282		43	31	317			
178		37	1	213			30	248		46	7	283	22	48	5	318			
179			13	214		25	12	249		47	40	284		48	6	319			
180			57	215			23	250		48	41	285				320			
181		39	45	216			30	251			42	286				321			
182			45	217			58	252		51	0	287				322			
183			46	218		28	46	253			1	288				323			
184			46	219		29	58	254		55	1	289				324			
185	21	1	30	220		30	46	255			14	290				325			
186			30	221			47	256			1	291				326			
187			31	222			48	257			10	292				327			
188		3	9	223		31	5	258			14	293				328			
189		4	12	224			6	259			57	294				329			
190			20	225			38	260			58	295				330			
191			21	226			39	261	22	2	30	296				331			
192		5	20	227			39	262			31	297				332			
193		6	24	228		33	10	263			31	298				333			
194			25	229			42	264		8	45	299				334			
195		7	25	230			43	265			46	300				335			
196			26	231			44	266		11	55	301				336			
197		8	25	232		35	8	267			56	302				337			
198			26	233			9	268		12	45	303				338			
199		10	12	234			12	269			46	304				339			
200			15	235		36	9	270		15	49	305				340			
201		13	50	236			10	271		16	10	306				341			
202			51	237		37	11	272			30	307				342			
203		14	17	238			11	273			30	308				343			
204			17	239		39	35	274			30	309				344			
205			18	240		40	35	275			31	310				345			
206		15	19	241			45	276			32	311				346			
207		19	20	242			46	277		17	33	312				347			
208			41	243		43	9	278			34	313				348			
209		21	34	244			9	279		19	40	314				349			
210			38	245		45	10	280		31	41	315				350			



ตารางที่ ก.4 การเข้ามาใช้บริการของผู้โดยสาร ณ บริเวณเคาน์เตอร์ตรวจตั๋ว และสัมภาระ เที่ยวบิน JL 622

Check in

Date : Mar 1 ,98

Schedule Flight : 23.59

Flight : JL 622

Aircraft Type : B 777

From : Bangkok To Osaka

Bay No : 24

	Arrived Time				Arrived Time				Arrived Time				Arrived Time				Arrived Time		
	Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec
1	21	14	0	36		24	71		33	21	106				141				
2			0	37		24	72		38	57	107				142				
3		21	30	38		24	73			57	108				143				
4			37	39		24	74			57	109				144				
5			42	40		24	75			57	110				145				
6			42	41		24	76			57	111				146				
7		24	14	42		24	77		42	15	112				147				
8			14	43		24	78			15	113				148				
9			47	44	40	3	79		58	37	114				149				
10		27	0	45	42	43	80		59	1	115				150				
11			0	46	45	21	81	23	6	15	116				151				
12			0	47		21	82		17	0	117				152				
13			11	48		21	83		21	30	118				153				
14			53	49	47	41	84				119				154				
15			53	50	50	12	85				120				155				
16			53	51	54	21	86				121				156				
17		28	17	52		21	87				122				157				
18			17	53	58	26	88				123				158				
19			17	54		28	89				124				159				
20			17	55		26	90				125				160				
21		34	8	56		35	91				126				161				
22		35	19	57	22	6	92				127				162				
23		39	15	58		10	93				128				163				
24			15	59		12	94				129				164				
25			24	60		34	95				130				165				
26			24	61		39	96				131				166				
27			24	62		39	97				132				167				
28			24	63		39	98				133				168				
29			24	64	19	44	99				134				169				
30			24	65	20	45	100				135				170				
31			24	66		23	101				136				171				
32			24	67		44	102				137				172				
33			24	68		44	103				138				173				
34			24	69	25	39	104				139				174				
35			24	70	25	39	105				140				175				

ตารางที่ ก.5 การเข้ามาใช้บริการของผู้โดยสาร ณ บริเวณเคาน์เตอร์ตรวจตั๋ว และสัมภาระ เที่ยวบิน KU 412

### Check in

Date : Aug 26 ,97

Schedule Flight : 0400

Flight : KU 412

Aircraft Type : B 744

From : Bangkok To Kuwait

Bay No : 43

	Arrived Time				Arrived Time				Arrived Time				Arrived Time						
	Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec				
1	1	7	20	36			47	71		23	37	106		34	40	141			35
2			23	37			48	72			40	107			43	142			40
3			24	38		17	0	73		24	19	108			44	143			47
4			30	39			24	74			40	109			45	144		44	23
5			35	40			25	75		25	16	110			46	145			40
6			36	41			27	76			31	111			56	146			42
7			40	42			33	77			32	112		35	1	147			45
8			40	43			35	78			50	113			6	148			47
9			47	44			36	79			51	114			57	149			49
10			50	45			40	80		26	16	115			58	150			50
11		8	30	46			44	81			17	116			59	151			53
12		10	13	47		18	47	82			24	117		36	0	152		45	35
13			14	48			49	83			33	118			15	153			35
14			15	49		19	1	84		29	0	119			35	154			35
15			16	50			5	85			2	120			37	155			35
16			34	51			5	86			5	121			50	156		46	45
17			43	52			10	87			15	122		37	10	157			47
18			48	53			37	88			17	123			13	158		47	20
19		11	7	54			40	89			50	124		38	7	159			20
20			9	55	1	20	7	90			58	125			10	160		51	35
21			29	56			25	91		30	20	126			27	161			37
22		12	0	57			45	92			20	127			31	162			38
23			16	58			45	93			55	128		39	7	163			53
24			18	59		21	13	94			55	129			10	164		35	20
25			21	60			13	95		31	0	130			33	165		56	15
26		13	0	61			50	96			11	131			37	166			18
27			2	62			52	97			15	132			40	167			20
28		14	35	63		22	10	98			37	133			44	168		38	30
29			58	64			14	99			38	134		41	55	169	2	7	35
30		15	0	65			15	100			55	135			56	170		5	35
31			28	66			58	101		32	3	136			57	171			45
32			31	67		23	5	102			9	137		43	10	172			50
33			35	68			6	103			45	138			13	173			53
34			47	69			17	104		33	14	139			19	174		17	20
35		16	45	70			20	105			15	140			35	175		17	40

ตารางที่ ก.5 (ต่อ)

## Check in

Date : Aug 26, 97

Flight : KU 412

From : Bangkok To Kuwait

Schedule Flight : 0400

Aircraft Type : B 744

Bay No : 43

	Arrived Time				Arrived Time				Arrived Time				Arrived Time				Arrived Time		
	Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec
176		17	50	211				246				281				316			
177		18	5	212				247				282				317			
178		21	30	213				248				283				318			
179		29	20	214				249				284				319			
180			25	215				250				285				320			
181			26	216				251				286				321			
182			26	217				252				287				322			
183			27	218				253				288				323			
184			28	219				254				289				324			
185			29	220				255				290				325			
186			30	221				256				291				326			
187			35	222				257				292				327			
188		30	15	223				258				293				328			
189		35	10	224				259				294				329			
190		36	25	225				260				295				330			
191			50	226				261				296				331			
192		38	50	227				262				297				332			
193			55	228				263				298				333			
194			56	229				264				299				334			
195			57	230				265				300				335			
196			58	231				266				301				336			
197			59	232				267				302				337			
198		59	12	233				268				303				338			
199	3	0	13	234				269				304				339			
200				235				270				305				340			
201				236				271				306				341			
202				237				272				307				342			
203				238				273				308				343			
204				239				274				309				344			
205				240				275				310				345			
206				241				276				311				346			
207				242				277				312				347			
208				243				278				313				348			
209				244				279				314				349			
210				245				280				315				350			

ตารางที่ ก.6 การเข้ามาใช้บริการของผู้โดยสาร ณ บริเวณเคาน์เตอร์ตรวจตั๋ว และสัมภาระ เที่ยวบิน SQ880

### Check in

Date : Sep 2 ,98

Flight : SQ 880

From : Bangkok To Singapore

Schedule Flight : 0030

Aircraft Type : A 300

Bay No : 12

No	Arrived Time			No	Arrived Time			No	Arrived Time			No	Arrived Time		
	Hr	min	sec		Hr	min	sec		Hr	min	sec		Hr	min	sec
1	21	36	51	36	18	49	71				106			141	
2			52	37	19	52	72				107			142	
3			55	38	22	11	73				108			143	
4		37	2	39	30	31	74				109			144	
5			3	40		32	75				110			145	
6			5	41	35	55	76				111			146	
7			9	42	36	18	77				112			147	
8			10	43		19	78				113			148	
9		38	53	44	37	11	79				114			149	
10		39	0	45		12	80				115			150	
11			1	46	38	7	81				116			151	
12			54	47	45	56	82				117			152	
13		40	28	48		57	83				118			153	
14		41	18	49	47	34	84				119			154	
15			19	50	23	2	25	85			120			155	
16		46	45	51	3	43	86				121			156	
17		47	4	52	5	47	87				122			157	
18			13	53	6	11	88				123			158	
19			14	54	8	32	89				124			159	
20			15	55		33	90				125			160	
21			49	56	20	30	91				126			161	
22			50	57		31	92				127			162	
23	22	0	15	58		39	93				128			163	
24		1	53	59	21	31	94				129			164	
25			54	60	28	34	95				130			165	
26		4	45	61			96				131			166	
27			46	62			97				132			167	
28			47	63			98				133			168	
29			48	64			99				134			169	
30		7	25	65			100				135			170	
31		10	17	66			101				136			171	
32		16	50	67			102				137			172	
33			51	68			103				138			173	
34		18	47	69			104				139			174	
35			48	70			105				140			175	



ตารางที่ ก.7 การเข้ามาใช้บริการของผู้โดยสาร ณ บริเวณค่านครวงคนเข้าเมือง สายการบิน TG 641

### Immigration

Date : Mar 1 ,98

Schedule Flight : 1525

Flight : TG 641

Aircraft Type : B 744

From : Narita To Bangkok

Bay No : 15

Time			No. of Pas.	Time			No. of Pas.	Time			No. of Pas.
Hr.	min.	sec.		Hr.	min.	sec.		Hr.	min.	sec.	
	30	0			40	0	10		50	0	
		15				15	18			15	
		30				30	7			30	
		45				45	5			45	
	31	0			41	0	0		51	0	
		15				15	0			15	
		30				30	0			30	
		45				45	0			45	
	32	0			42	0	0		52	0	
		15				15	3			15	
		30				30	2			30	
		45				45	0			45	
15	33	0	0		43	0	2		53	0	
		15	0			15	0			15	
		30	0			30	0			30	
		45	4			45	5			45	
	34	0	6		44	0	4		54	0	
		15	8			15	4			15	
		30	2			30	0			30	
		45	1			45	0			45	
	35	0	3		45	0			55	0	
		15	16			15				15	
		30	2			30				30	
		45	7			45				45	
	36	0	14		46	0			56	0	
		15	14			15				15	
		30	10			30				30	
		45	15			45				45	
	37	0	11		47	0			57	0	
		15	13			15				15	
		30	9			30				30	
		45	20			45				45	
	38	0	12		48	0			58	0	
		15	15			15				15	
		30	19			30				30	
		45	10			45				45	
	39	0	34		49	0			59	0	
		15	30			15				15	
		30	24			30				30	
		45	31			45				45	

ตารางที่ ก.8 การเข้ามาใช้บริการของผู้โดยสาร ณ บริเวณด่านตรวจคนเข้าเมือง สายการบิน TG 637

### Immigration

Date : Mar 1 ,98

Schedule Flight : 1239

Flight : TG 637

Aircraft Type : A 330

From : Teipac To Bangkok

Bay No : 14

Time			No. of Pas.	Time			No. of Pas.	Time			No. of Pas.
Hr.	min.	sec.		Hr.	min.	sec.		Hr.	min.	sec.	
	30	0		13	0	0	1		10	0	
		15				15	7			15	
		30				30	9			30	
		45				45	15			45	
	31	0			1	0	3		11	0	
		15				15	2			15	
		30				30	0			30	
		45	0			45	1			45	
12	32	0	1		2	0	0		12	0	
		15	0			15	0			15	
		30	4			30	0			30	
		45	6			45				45	
	33	0	5		3	0			13	0	
		15	3			15				15	
		30	1			30				30	
		45	1			45				45	
	34	0	5		4	0			14	0	
		15	0			15				15	
		30	5			30				30	
		45	8			45				45	
	35	0	8		5	0			15	0	
		15	6			15				15	
		30	5			30				30	
		45	4			45				45	
	36	0	2		6	0			16	0	
		15	2			15				15	
		30	7			30				30	
		45	4			45				45	
	37	0	4		7	0			17	0	
		15	2			15				15	
		30	7			30				30	
		45	16			45				45	
	38	0	7		8	0			18	0	
		15	2			15				15	
		30	6			30				30	
		45	20			45				45	
	39	0	8		9	0			19	0	
		15	8			15				15	
		30	4			30				30	
		45	8			45				45	

ตารางที่ ก. 9 การเข้ามาใช้บริการของผู้โดยสาร ณ บริเวณค่านตรวจคนเข้าเมือง สายการบิน TG 681

### Immigration

Date : Mar 1 ,98

Schedule Flight : 1500

Flight : TG 681

Aircraft Type : A 300

From : Hochimin To Bangkok

Bay No : 56

Time			No. of Pas.	Time			No. of Pas.	Time			No. of Pas.
Hr.	min.	sec.		Hr.	min.	sec.		Hr.	min.	sec.	
	10	0			20	0	17		30	0	
		15				15	14			15	
		30				30	21			30	
		45				45	18			45	
	11	0			21	0	5		31	0	
		15				15	10			15	
		30				30	10			30	
		45				45	16			45	
	12	0			22	0	2		32	0	
		15				15	1			15	
		30				30	6			30	
		45				45	1			45	
	13	0			23	0	0		33	0	
		15				15	0			15	
		30				30	0			30	
		45				45	0			45	
	14	0			24	0	0		34	0	
		15				15	1			15	
		30				30	0			30	
		45				45	0			45	
	15	0			25	0	2		35	0	
		15				15	8			15	
		30				30	4			30	
		45				45	0			45	
15	16	0	0		26	0			36	0	
		15	2			15				15	
		30	5			30				30	
		45	5			45				45	
	17	0	5		27	0			37	0	
		15	3			15				15	
		30	4			30				30	
		45	2			45				45	
	18	0	6		28	0			38	0	
		15	7			15				15	
		30	5			30				30	
		45	0			45				45	
	19	0	11		29	0			39	0	
		15	5			15				15	
		30	7			30				30	
		45	6			45				45	

ตารางที่ ก.10 การเข้ามาใช้บริการของผู้โดยสาร ณ บริเวณด่านตรวจคนเข้าเมือง สายการบิน TG 691

### Immigration

Date : Mar 1, 98

Schedule Flight : 1316

Flight : TG 691

Aircraft Type : B 737

From : Viengchan To Bangkok

Bay No : 21

Time			No. of Pas.	Time			No. of Pas.	Time			No. of Pas.
Hr.	min.	sec.		Hr.	min.	sec.		Hr.	min.	sec.	
	20	0			30	0			40	0	
		15				15				15	
		30				30				30	
		45				45				45	
	21	0			31	0			41	0	
		15				15				15	
		30				30				30	
		45				45				45	
13	22	0	0		32	0			42	0	
		15	0			15				15	
		30	1			30				30	
		45	2			45				45	
	23	0	1		33	0			43	0	
		15	2			15				15	
		30	8			30				30	
		45	0			45				45	
	24	0	6		34	0			44	0	
		15	5			15				15	
		30	8			30				30	
		45	10			45				45	
	25	0	15		35	0			45	0	
		15	0			15				15	
		30	8			30				30	
		45	11			45				45	
	26	0	8		36	0			46	0	
		15	6			15				15	
		30	0			30				30	
		45	3			45				45	
	27	0	1		37	0			47	0	
		15	7			15				15	
		30	10			30				30	
		45	9			45				45	
	28	0	1		38	0			48	0	
		15	3			15				15	
		30	0			30				30	
		45	0			45				45	
	29	0	2		39	0			49	0	
		15	1			15				15	
		30	0			30				30	
		45	5			45				45	

ตารางที่ ก.11 การเข้ามาใช้บริการของผู้โดยสาร ณ บริเวณด่านตรวจคนเข้าเมือง สายการบิน TG 416

### Immigration

Date : Mar 1, 98

Flight : TG 416

From : Kuala Lumpur To Bangkok

Schedule Flight : 1341

Aircraft Type : A 330

Bay No : 22

Time			No. of Pas.	Time			No. of Pas.	Time			No. of Pas.
Hr.	min.	sec.		Hr.	min.	sec.		Hr.	min.	sec.	
	40	0			30	0	7		0	0	
		15				15	4			15	
		30				30	6			30	
		45				45	1			45	
	41	0			51	0	5		1	0	
		15				15	7			15	
		30				30	9			30	
		45				45	3			45	
	42	0			52	0	0		2	0	
		15				15	1			15	
		30				30	1			30	
		45				45	2			45	
	43	0			53	0	0		3	0	
		15				15	0			15	
		30				30	2			30	
		45				45	1			45	
13	44	0	0		54	0	0		4	0	
		15	0			15	0			15	
		30	1			30				30	
		45	4			45				45	
	45	0	5		55	0			5	0	
		15	1			15				15	
		30	2			30				30	
		45	2			45				45	
	46	0	5		56	0			6	0	
		15	8			15				15	
		30	6			30				30	
		45	12			45				45	
	47	0	23		57	0			7	0	
		15	18			15				15	
		30	8			30				30	
		45	9			45				45	
	48	0	11		58	0			8	0	
		15	3			15				15	
		30	5			30				30	
		45	6			45				45	
	49	0	12		59	0			9	0	
		15	3			15				15	
		30	7			30				30	
		45	8			45				45	

ตารางที่ ก.12 การเข้ามาใช้บริการของผู้โดยสาร ณ บริเวณค่านตรวจคนเข้าเมือง สายการบิน TG 304

### Immigration

Date : Mar 1 ,98

Schedule Flight : 1214

Flight : TG 304

Aircraft Type : A 300

From : Rangoon To Bangkok

Bay No : 31

Time			No. of Pas.	Time			No. of Pas.	Time			No. of Pas.
Hr.	min.	sec.		Hr.	min.	sec.		Hr.	min.	sec.	
12	24	0	0		34	0	2		44	0	
		15	2			15	3			15	
		30	0			30	2			30	
		45	3			45	0			45	
	25	0	3		35	0	0		45	0	
		15	2			15	0			15	
		30	0			30	3			30	
		45	2			45	3			45	
	26	0	0		36	0	0		46	0	
		15	0			15	5			15	
		30	0			30				30	
		45	0			45				45	
	27	0	0		37	0			47	0	
		15	7			15				15	
		30	7			30				30	
		45	0			45				45	
	28	0	4		38	0			48	0	
		15	1			15				15	
		30	3			30				30	
		45	9			45				45	
	29	0	9		39	0			49	0	
		15	17			15				15	
		30	11			30				30	
		45	13			45				45	
	30	0	2		40	0			50	0	
		15	12			15				15	
		30	9			30				30	
		45	14			45				45	
	31	0	17		41	0			51	0	
		15	18			15				15	
		30	2			30				30	
		45	21			45				45	
	32	0	16		42	0			52	0	
		15	7			15				15	
		30	29			30				30	
		45	5			45				45	
	33	0	2		43	0			53	0	
		15	5			15				15	
		30	0			30				30	
		45	0			45				45	

ตารางที่ ก.13 การเข้ามาใช้บริการของผู้โดยสาร ณ บริเวณด่านตรวจคนเข้าเมือง สายการบิน CI 641

### Immigration

Date : Mar 1, 98

Flight : CI 641

From : Hongkong To Bangkok

Schedule Flight : 1332

Aircraft Type : B 747

Bay No : 36

Time			No. of Pas.	Time			No. of Pas.	Time			No. of Pas.
Hr.	min.	sec.		Hr.	min.	sec.		Hr.	min.	sec.	
13	42	0	0		52	0	0		2	0	
		15	1			15	0			15	
		30	0			30	0			30	
		45	11			45	0			45	
43	0		4		53	0	0		3	0	
	15		5			15	5			15	
	30		4			30	0			30	
	45		8			45	0			45	
44	0		13		54	0	3		4	0	
	15		11			15	2			15	
	30		6			30	1			30	
	45		11			45	0			45	
45	0		18		55	0	20		5	0	
	15		7			15				15	
	30		12			30				30	
	45		11			45				45	
46	0		11		56	0			6	0	
	15		5			15				15	
	30		40			30				30	
	45		10			45				45	
47	0		25		57	0			7	0	
	15		35			15				15	
	30		22			30				30	
	45		36			45				45	
48	0		17		58	0			8	0	
	15		16			15				15	
	30		8			30				30	
	45		7			45				45	
49	0		4		59	0			9	0	
	15		6			15				15	
	30		5			30				30	
	45		0			45				45	
50	0		0		14	0	0		10	0	
	15		0			15				15	
	30		0			30				30	
	45		8			45				45	
51	0		0		1	0			11	0	
	15		0			15				15	
	30		0			30				30	
	45		0			45				45	

ตารางที่ ก. 14 ความล่าช้าของผู้โดยสาร ณ บริเวณเคาน์เตอร์ตรวจตัว และสัมภาระ เที่ยวบิน NG 008

### Check In

Date: Mar 1, 98

Schedule Flight : 2315

Flight: NG 008

	Arrived Time			Service Time			End of Service			N		Arrived Time			Service Time			End of Service			N
	hr.	min.	sec	hr.	min.	sec	hr.	min.	sec			hr.	min.	sec	hr.	min.	sec	hr.	min.	sec	
1	19	55	45	19	56	0	19	59	40	1	250										
10	20	0	10	20	1	55	20	9	45	2	260										
20		14	5		15	58		18	55	2	270										
30		16	58		20	35		22	36	4	280										
40		24	45		27	34		28	10	5	290										
50		31	10		32	25		36	40	2	300										
60		35	40		38	40		43	30	3	310										
70		43	22		44	7		48	21	3	320										
80		45	15		46	10		48	3	5	330										
90		47	55		58	53	21	1	4	4	340										
100		49	50		50	25	20	54	15	4	350										
110		56	56		57	35	20	58	20	5	360										
120	21	7	40	21	7	56	21	11	15	5	370										
130		10	10		14	30		16	20	4	380										
140		14	30		15	45		20	4	5	390										
150		29	0		30	55		33	25	2	400										
160		30	8		31	10		33	55	2	410										
170		45	10		45	30		52	58	2	420										
180		38	5		54	15	22	0	0	2	430										
190		58	25		59	58		3	44	1	440										
200	22	3	35	22	9	20		12	10	1	450										
210											460										
220											470										
230											480										
240											490										

Note : N = Number of service channel ( Before and after service)



ตารางที่ ก.15 ความล่าช้าของผู้โดยสาร ณ บริเวณเคาน์เตอร์ตรวจตั๋ว และสัมภาระ สายการบินไทย

Check in

Date: Mar 1, 98

Time: 1930-2330

Flight: Thai Airways

	Arrived Time			Service Time			End of Service			N		Arrived Time			Service Time			End of Service			N
	hr.	min.	sec	hr.	min.	sec	hr.	min.	sec			hr.	min.	sec	hr.	min.	sec	hr.	min.	sec	
20										520	22	19	15	22	23	0	22	27	1		
40	20	37	20	20	38	30	20	45	40	540		25	0		25	41	22	44	8		
60		41	33		46	44		48	59	560		28	9		37	9	22	40	26		
80		48	15		51	41		57	54	580		32	46		48	30	23	5	6		
100		50	33		55	12		58	30	600		39	56		43	40	22	53	10		
120		57	36	21	0	59	21	7	50	620		44	8		48	17	22	52	35		
140	21	0	17		6	52		10	20	640		49	1		53	10	23	13	30		
160		6	20		12	30		28	42	660		53	44		54	48	22	57	37		
180		8	15		13	52		20	0	680		55	3		59	38	23	3	30		
200		10	21		17	10		21	23	700	23	2	18	23	6	8	23	10	30		
220		17	30		27	10		29	9	720		10	50		15	41	23	18	19		
240		20	35		28	9		33	28	740		13	13		18	25	23	19	50		
260		23	40		26	50		33	13	760		19	16		23	30	23	25	22		
280		27	38		32	35		35	25	780		25	32		28	10	23	30	17		
300		34	17		40	9		44	50	800											
320		37	50		47	44		49	18	820											
340		39	32		45	25		52	11	840											
360		42	0		49	20		52	30	860											
380		45	15		50	42		57	48	880											
400		50	31	22	0	20	22	6	15	900											
420		54	18		0	47		8	10	920											
440	22	4	0		10	26		15	28	940											
460		6	0		13	47		18	40	960											
480		12	10		15	59		20	20	980											
500		16	54		20	30		28	0	1000											

Note : N = Number of service channel ( Before and after service)

ตารางที่ ก.16 ความล่าช้าของผู้โดยสาร ณ บริเวณค่านตรวจหนังสือเดินทาง

Passport Control

Date: Mar 1, 98

Time: 1930-2330

Location: Terminal 2

	Arrived Time			Service Time			End of Service			N		Arrived Time			Service Time			End of Service			N
	hr.	min.	sec.	hr.	min.	sec.	hr.	min.	sec.			hr.	min.	sec.	hr.	min.	sec.	hr.	min.	sec.	
1	19	38	35		38	49		42	33	7	500		47	55		49	20		50	35	8
20		43	41		43	42		44	57	7	520		50	11		50	12		52	56	9
40		45	35		49	5		46	48	2	540		51	39		52	15		53	18	7
60		50	39		51	40		53	40	6	560		55	0		56	1		57	48	10
80		56	16		57	47		58	54	4	580		57	8		57	9		59	55	8
100		1	41		8	13		9	45	3	600	21	0	20		2	20		3	0	7
120		5	0		10	26		11	15	7	620		1	24		2	5		2	50	7
140		5	20		9	6		9	34	7	640		5	46		5	46		7	26	4
160		5	60		11	49		12	23	8	660		8	28		10	33		11	12	6
180		9	45		10	50		11	10	7	680		11	2		14	42		18	12	8
200	20	15	20		16	0		18	29	8	700		11	40		13	10		14	8	8
220		16	45		21	50		22	10	8	720		16	17		17	17		17	53	5
240		18	45		20	17		21	20	8	740		16	30		17	52		18	42	7
260		24	0		24	29		24	50	7	760		19	30		21	25		22	40	11
280		25	25		25	50		26	41	7	780		25	0		26	0		26	51	10
300		27	10		27	6		28	32	8	800		27	34		29	0		29	41	6
320		28	7		28	51		29	13	8	820		30	36		31	0		31	58	10
340		30	25		31	22		33	30	7	840		33	7		33	7		34	21	7
360		32	30		34	58		36	30	7	860		34	34		35	43		37	0	11
380		34	10		37	22		37	54	8	880		37	19		37	19		38	5	7
400		36	45		37	50		38	48	9	900		40	50		40	50		42	16	9
420		39	13		39	13		40	6	6	920		42	5		42	5		42	54	9
440		42	21		45	21		44	5	6	940		44	11		45	19		49	59	9
460		44	14		45	21		46	48	7	960		46	27		48	67		51	15	10
480		45	53		47	44		48	30	7	980		49	23		49	42		52	12	11

Note : N = Number of service channel ( Before and after service)

ตารางที่ ก.16 (ต่อ)

## Passport Control

Date: Mar 1, 98

Time: 1930-2330

Location: Terminal 2

	Arrived Time			Service Time			End of Service			N		Arrived Time			Service Time			End of Service			N
	hr.	min.	sec.	hr.	min.	sec.	hr.	min.	sec.			hr.	min.	sec.	hr.	min.	sec.	hr.	min.	sec.	
1000		51	36		52	36		53	59	11	1500		51	18		52	48		55	15	11
1020		53	42		56	58		58	37	9	1520		53	4		53	49		55	15	11
1040		56	52		58	47		59	52	7	1540		55	38		57	38		59	6	11
1060		58	29		0	30		2	9	8	1560		58	48		1	45		2	3	11
1080		59	52		0	10		1	48	11	1580	23	1	19		2	0		4	26	11
1100	22	3	2		6	7		6	53	11	1600		5	21		7	33		8	26	5
1120		5	9		8	11		9	3	11	1620		8	46		11	26		13	2	8
1140		8	25		11	54		12	30	11	1640		10	39		15	4		16	6	6
1160		10	39		11	14		11	57	10	1660		11	57		16	10		17	0	6
1180		14	59		15	45		16	31	10	1680		15	48		20	50		22	10	6
1200		15	51		13	25		19	15	10	1700		18	2		20	16		21	0	6
1220		18	25		19	23		20	41	11	1720		19	50		23	46		24	44	8
1240		22	4		24	5		25	58	7	1740		22	50		24	39		26	7	8
1260		23	33		24	7		24	39	9	1760		25	39		28	9		29	8	6
1280		26	28		26	28		28	20	6	1780		29	23		33	11		33	58	7
1300		30	21		32	52		33	20	8	1800		33	44		38	38		39	22	4
1320		32	54		33	33		33	33	8	1820		37	14		41	12		42	11	4
1340		33	30		36	9		37	6	8	1840		38	36		43	52		45	28	4
1360		35	17		35	17		37	6	11	1860		41	50		42	36		43	46	4
1380		37	55		38	6		38	55	10	1880		44	4		46	24		49	31	4
1400		40	2		42	32		43	36	11	1900										
1420		44	22		46	15		46	51	10	1920										
1440		46	36		48	32		50	49	9	1940										
1460		47	52		49	15		51	0	10	1960										
1480		50	18		51	18		52	38	10	1980										

Note : N = Number of service channel ( Before and after service)

ตารางที่ ก.17 ความล่าช้าของผู้โดยสาร ณ บริเวณค่านตรวจคนเข้าเมือง

Immigration

Date: Mar 1, 98

Time: 1200-1500

Location: Terminal 1

	Arrived Time			Service Time			End of Service			N		Arrived Time			Service Time			End of Service			N
	Hr.	min.	sec.	Hr.	min.	sec.	Hr.	min.	sec.			Hr.	min.	sec.	Hr.	min.	sec.	Hr.	min.	sec.	
1	12	0	0	12	0	5	12	1	10	0	500	13	15	20	13	21	40	13	31	55	14
20		11	0		17	18		19	33	2	520		16	44		23	25		25	40	12
40		13	26		19	12		21	3	2	540		18	31		25	10		27	25	14
60		13	40		18	24		20	39	2	560		19	14		27	1		29	16	14
80		15	42		23	10		25	5	5	580		23	40		30	44		32	59	14
100		17	51		25	8		26	49	6	600		33	0		42	5		44	20	10
120		25	30		27	10		29	25	7	620		35	40		37	25		40	30	10
140		30	22		36	40		38	55	11	640		55	50		57	33		58	40	1
160		30	21		35	12		37	39	11	660		56	12		57	23	14	0	25	3
180		31	40		37	15		39	30	11	680		56	10		57	39		59	42	3
200		32	10		38	28		40	43	12	700		57	31	14	2	41		4	20	3
220		34	7		39	23		40	7	12	720		59	29		4	14		5	33	10
240		36	33		40	11		42	26	13	740		59	30		8	24		9	52	10
260		55	35	13	7	20	13	9	35	13	760	14	11	35		15	44		17	42	7
280		58	41		59	5		1	10	13	780		30	9		31	2		34	5	8
300	13	2	55		11	13		13	28	14	800		31	41		42	20		44	29	10
320		3	44		6	18		8	33	13	820		33	0		41	0		42	20	11
340		8	55		12	1		14	14	13	840		35	30		42	40		44	0	12
360		9	21		15	6		16	20	13	860		22	15		38	20		42	39	1
380		10	34		15	8		16	56	12	880		27	40		0	32		44	40	1
400		10	59		25	44		27	59	12	900		38	16	15	1	7	15	3	13	13
420		12	10		18	15		20	30	15	920		38	49		1	27		2	9	13
440		13	14		13	15		15	0	15	940		39	40	14	53	38		55	20	14
460		13	17		18	6		19	21	15	960		40	10		57	40		59	25	14
480		13	20		19	8		21	23	15	980		45	32	15	2	45	15	5	24	14

Note : N = Number of service channel ( Before and after service)

ตารางที่ ก.17 (ต่อ)

## Immigration

Date: Mar 1, 98

Time: 1200-1500

Location: Terminal 1

	Arrived Time			Service Time			End of Service			N		Arrived Time			Service Time			End of Service			N
	Hr.	min.	sec.	Hr.	min.	sec.	Hr.	min.	sec.			Hr.	min.	sec.	Hr.	min.	sec.	Hr.	min.	sec.	
1000	14	43	31	14	55	30	14	57	11	16	1500	15	44	38	15	53	35	15	54	18	12
1020		45	5	15	0	20	15	2	22	14	1520		45	57		54	53		55	42	12
1040		45	50		8	34		10	58	14	1540		49	23		55	22		55	57	14
1060		47	0		9	20		11	0	17	1560										
1080		48	0		11	34		12	30	17	1580										
1100		50	22		10	14		11	20	18	1600										
1120		53	25		15	50		17	11	18	1620										
1140		57	18		0	29		13	11	18	1640										
1160		57	31		9	7		11	30	18	1660										
1180	15	15	8		23	55		25	20	18	1680										
1200		17	13		30	20		31	50	18	1700										
1220		18	45		24	15		29	32	18	1720										
1240		19	30		23	17		24	57	19	1740										
1260		17	30		30	48		34	5	18	1760										
1280											1780										
1300		18	2		18	50		38	30	18	1800										
1320		18	13		26	3		27	3	18	1820										
1340		34	22		48	53		50	35	10	1840										
1360		35	49		37	42		38	25	7	1860										
1380		40	9		57	40		58	45	8	1880										
1400		40	50		44	20		45	5	8	1900										
1420		41	21		49	0		49	57	11	1920										
1440		42	18		45	36		46	30	12	1940										
1460		43	23		50	50		51	24	12	1960										
1480		43	57		46	57		47	42	12	1980										

Note : N = Number of service channel ( Before and after service)



ตารางที่ ก.19 ระยะเวลาในการให้บริการแก่ผู้โดยสาร ณ บริเวณเคาน์เตอร์ตรวจตั๋ว ที่ขบวน SQ 880

### Check In

Date : Sep 2, 98

Schedule Flight : 0030

Flight : SQ880

	Time Spent (sec)		Time Spent (sec)		Time Spent (sec)		Time Spent (sec)		Time Spent (sec)
1	171.5 M	36	61	71		106		141	
2	138	37	61	72		107		142	
3	93	38	61	73		108		143	
4	129	39	103 R	74		109		144	
5	129	40	103	75		110		145	
6	129	41	356	76		111		146	
7	129	42	249	77		112		147	
8	129	43	76	78		113		148	
9	129	44	77	79		114		149	
10	73	45	160	80		115		150	
11	73	46	173	81		116		151	
12	541	47	60	82		117		152	
13	144	48	118 Q	83		118		153	
14	270	49	119	84		119		154	
15	264	50	160	85		120		155	
16	265	51	160	86		121		156	
17	130	52	507	87		122		157	
18	131	53	301	88		123		158	
19	148	54	171	89		124		159	
20	113	55	172	90		125		160	
21	113	56	140	91		126		161	
22	244 P	57	141	92		127		162	
23	245	58	191	93		128		163	
24	244	59	254	94		129		164	
25	245	60		95		130		165	
26	159	61		96		131		166	
27	88	62		97		132		167	
28	89	63		98		133		168	
29	100	64		99		134		169	
30	440	65		100		135		170	
31	145	66		101		136		171	
32	145	67		102		137		172	
33	162	68		103		138		173	
34	162	69		104		139		174	
35	61	70		105		140		175	





ตารางที่ ก.21 ตารางการเก็บข้อมูลระยะเวลาในการให้บริการแก่ผู้โดยสาร ณ บริเวณด่านตรวจหนังสือเดินทาง

### Passport Control

Date: Mar 1, 98

Time: 1930-2330

Location: Terminal 2

Time Spent (sec)	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	N14	N15	N16	N17	N18	N19	N20	N21	N22	N23	N24	N25	N26	N27	N28	N29	N30	
(ช่วงเวลา 19.30 น.- 20.30 น.)									51	80	58	70		65			63	48			80		55	58		60	81	63		80	
									49	75	40	76		64			50	65			36		50	110		65		20		35	
									65	82	55	43		61			70	75			70		67	45		62		57		40	
									35	32	45	64		89			85	50			56		60	69		67		61			
									41	64	64	75		44			55	66			110		70			40		53			
														32			53	35			45		58			108					
(ช่วงเวลา 20.30 น.- 21.30 น.)									50	63	72	55	64		60		55	65	43					45	35		31	56	42		51
									52	70	55	80	42		61		50	51	87					55	120		37	38	51		70
									51	45	60	38	56		27		45	42	34					61	47		39	32	41		32
											52	56	51		51		41	51	33					84	38		38	51			
												44	32		41		56	36	38					38	52						
													29											51	26						

ตารางที่ ก.21 (ต่อ)

Passport Control

Date: Mar 1, 98

Time: 1930-2330

Location: Terminal 2

Time Spent (sec)	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	N14	N15	N16	N17	N18	N19	N20	N21	N22	N23	N24	N25	N26	N27	N28	N29	N30	
( ช่วงเวลา 21.30 น.- 22.30 น. )								36	41	59	64	37					45	56			30	73	72	37		54	46			36	
								40	74	39	50	70					48	60			70	34	33	60		40	70			41	
								52	40	32	34	44					65	33			58	54	100	35		90	65			59	
								70	30	48	72	51					50	45			58	67	47	50		50	54			62	
								56	83	51	44	55					31	54			33	88	42	40		32	44				
									32			32					90	30			32			29		44					
( ช่วงเวลา 22.30 น.- 23.30 น. )																								22							
								42	51	68	82	32					44	32			47	42	40	42	51		48	60			65
								48	81	32	45	39					51	40			53	27	60	45	24		53	54			81
								36	39	55	100	65					81	32			52	47	40	49	32		180	65			35
								80	51	56	52	75					65	55			38	104	48	76	36		65	58			65
								51	120		55	65					70	51			25	38	91	36	33			66			
																	34	101			44	50	30	50	66						

ตารางที่ ก.22 ตารางการเก็บข้อมูลระยะเวลาในการให้บริการแก่ผู้โดยสาร ณ บริเวณด่านตรวจคนเข้าเมือง

Immigration

Date: Mar 1, 98

Time: 1200-1500

Location: Terminal 1

Time Spent (sec)	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	N14	N15	N16	N17	N18	N19	N20	N21	N22	N23	N24	N25	N26	N27	N28	N29	N30
(ช่วงกทก 12.00 น.- 13.00 น.)				40			66	66	189	43	53		226	90				72	56		105		78	67						
				97			74	46		97	43		116					103	25		61		82	40						
							53	70		98	61		118					84	117		74		92	58						
(ช่วงกทก 13.00 น.- 14.00 น.)	54	57	43	77			67	117	48	82		82	24		59			114	53		64	37	186	67	104					
		53	67	63			80	102	44	155		58	55		67			49	52		92	54	92	33	98					
								37	60	38			47					66	101		57	44								
																						43								

ตารางที่ ก.22 (ต่อ)

### Immigration

Date: Mar 1, 98

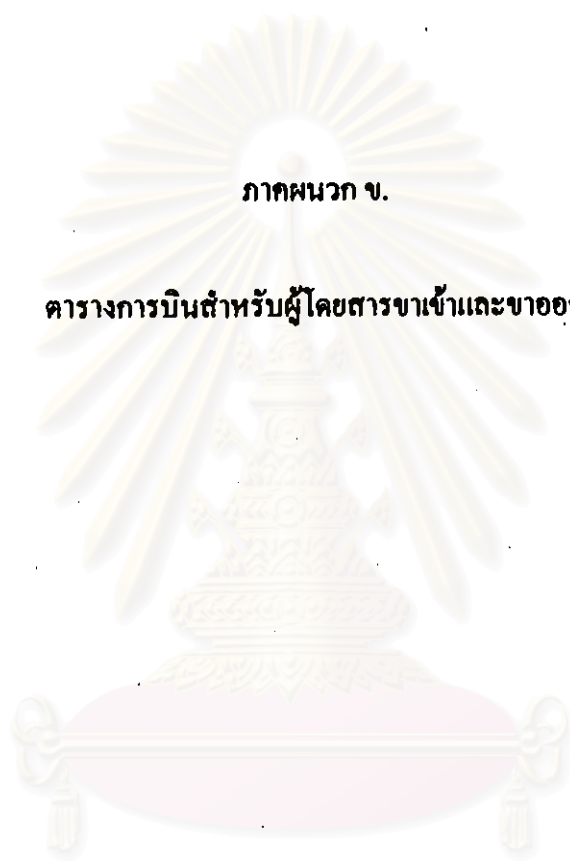
Time: 1200-1500

Location: Terminal 1

Time Spent (sec)	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	N14	N15	N16	N17	N18	N19	N20	N21	N22	N23	N24	N25	N26	N27	N28	N29	N30	
(ช่วงเวลา 14.00 น.- 15.00 น.)				86				94			54	68	45		45		118	83	84		109	86	66	78							
				40				112			84	41	40		54		46	58	50		49	59	61								
				132				73			73	94	38		61		83	94	69		84	71	81								
								77			58	78	55		39			57	65			79									
															48																
(ช่วงเวลา 15.00 น.- 16.00 น.)		128		78	36			63		177	63	77		84	106	69		36	41	68		54	74	69	75	57					
		36		30				61		116	67	75		57	59	62		57	53	62		67	54	45	36						
		94		36				54		30	122	57		54	66		59	26	47			44		59							
				80							60																				
				35																											

ภาคผนวก ข.

ตารางการบินสำหรับผู้โดยสารขาเข้าและขาออก



สถาบันวิทยบริการ  
จุฬาลงกรณ์มหาวิทยาลัย



ตาราง ข.2 ตัวอย่างตารางการบินสำหรับผู้โดยสารขาออก วันที่ 1 มีนาคม 2541

Record#	CODE	RECD	REDAIR	ACTIVE	FLIGHTNO	WEIGHT	OFFICE	AIRPORT	DATAX	TIMEX	DATHEP	TIMEDEP	ENRAGED	PAS	PAL	PTER	PRIORIT	PRE	TSJT	MAIL	MLL	TSTT	DAYM	
1	1	DO1801	MS-TAP	A-300	TLA-231	170500	TLA	NOY	23/02/98	2153	01/02/98	623	92	91	0	1	9926	0	0	0	0	0	0	88
2	2	DO1801	MS-THE	B-737	TLA-236	64630	TLA	MAK	25/02/98	1741	01/02/98	719	33	33	0	0	1	0	0	0	0	0	0	123
3	3	DO1803	MS-PDO	B-737	TLA-257	64630	TLA	TBT	26/02/98	1359	01/02/98	638	67	67	0	0	267	0	0	0	0	0	0	123
4	4	DO1804	MS-PDO	B-737	TLA-156	64630	TLA	PHB	26/02/98	1833	01/02/98	637	64	64	0	0	315	0	0	0	0	0	0	137
5	5	DO1805	MS-THE	A-300	TLA-270	165000	TLA	WLP	26/02/98	1512	01/02/98	659	107	107	0	0	3577	0	0	0	0	0	0	32
6	6	DO1806	MS-TAS	A-300	TLA-003	170500	TLA	UTH	26/02/98	1846	01/02/98	797	109	108	0	0	3794	0	0	0	0	0	0	62
7	7	DO1807	MS-TDA	B-737	TLA-048	64630	TLA	EKC	26/02/98	033	01/02/98	714	61	61	0	0	1674	0	0	0	0	0	0	85
8	8	DO1808	MS-TDC	B-737	TLA-267	64630	TLA	KET	26/02/98	2031	01/02/98	734	139	100	0	29	1344	0	0	0	0	0	0	66
9	9	DO1809	MS-TLS	A-300	TLA-100	165000	TLA	CKX	26/02/98	2148	01/02/98	732	222	216	0	6	10442	0	0	0	0	0	0	63
10	10	DO1810	MS-TAL	A-300	TLA-233	170500	TLA	DET	26/02/98	2033	01/02/98	828	97	97	0	0	1793	0	0	0	0	0	0	1
11	11	DO1811	MS-TES	A7R-72	TLA-363	31300	TLA	KET	26/02/98	1824	01/02/98	739	64	64	0	0	32	0	0	0	0	0	0	121
12	12	DO1812	MS-TTP	A-300	TLA-136	157500	TLA	CHI	26/02/98	2022	01/02/98	724	91	91	0	0	3897	0	0	0	0	0	0	73
13	13	DO1814	MS-TIC	A-310	TLA-203	162800	TLA	KET	26/02/98	3008	01/02/98	845	258	156	0	102	3146	0	0	0	0	0	0	61
14	14	DO1815	MS-TDS	B-737	TLA-237	64630	TLA	EDT	26/02/98	2037	01/02/98	817	80	78	0	2	240	0	0	0	0	0	0	67
15	15	DO1816	MS-TER	A-300	TLA-183	157500	TLA	CHI	26/02/98	923	01/02/98	820	112	103	0	9	663	0	0	0	0	0	0	64
16	16	DO1817	MS-TIA	A-310	TLA-194	142800	TLA	CHI	26/02/98	3038	01/02/98	920	261	174	0	87	38	0	0	0	0	0	0	62
17	17	DO1818	MS-TET	A-300	TLA-207	165000	TLA	KET	26/02/98	1634	01/02/98	1019	216	203	0	13	14	0	0	0	0	0	0	63
18	18	DO1819	MS-TDS	B-737	TLA-160	64630	TLA	LPT	01/02/98	859	01/02/98	1027	38	30	0	0	8	0	0	0	0	0	0	67
19	19	DO1820	MS-TDA	B-737	TLA-134	64630	TLA	PHB	26/02/98	1332	01/02/98	1024	104	72	0	31	127	0	0	0	0	0	0	64
20	20	DO1821	MS-TET	A-300	TLA-133	165000	TLA	CHI	26/02/98	3048	01/02/98	1116	197	182	0	9	233	0	0	0	0	0	0	63
21	21	DO1822	MS-THE	A-300	TLA-133	165000	TLA	EDT	01/02/98	923	01/02/98	1126	147	133	0	24	7458	0	0	0	0	0	0	61
22	22	DO1823	MS-THE	A-300	TLA-289	165000	TLA	KET	01/02/98	812	01/02/98	1132	263	204	0	57	55	0	0	0	0	0	0	64
23	23	DO1824	MS-TAP	A-300	TLA-118	170500	TLA	CKX	01/02/98	937	01/02/98	1140	224	187	0	37	3	0	0	0	0	0	0	64
24	24	DO1825	MS-TDK	B-737	TLA-042	64630	TLA	EKC	26/02/98	2011	01/02/98	1155	131	110	0	2	187	0	0	0	0	0	0	126
25	25	DO1826	MS-TDL	A-300	TLA-118	165000	TLA	CKX	01/02/98	939	01/02/98	1230	169	156	0	15	218	0	0	0	0	0	0	75
26	26	DO1827	MS-TIC	A-310	TLA-810	142000	TLA	UTH	01/02/98	1147	01/02/98	1302	186	182	0	4	7	0	0	0	0	0	0	64
27	27	DO1828	MS-TDS	A7R-72	TLA-163	21300	TLA	PHB	01/02/98	1163	01/02/98	1305	48	37	0	3	58	0	0	0	0	0	0	131
28	28	DO1829	MS-TDS	A-300	TLA-211	157500	TLA	KET	01/02/98	1118	01/02/98	1326	308	288	0	20	100	0	0	0	0	0	0	65
29	29	DO1830	MS-TAL	A-300	TLA-112	163000	TLA	CKX	01/02/98	1206	01/02/98	1339	199	175	0	24	233	0	0	0	0	0	0	61
30	30	DO1831	MS-TTP	A-300	TLA-213	157500	TLA	KET	01/02/98	1025	01/02/98	1414	245	235	0	18	67	0	0	0	0	0	0	73



ภาคผนวก ก.

รายละเอียดแบบจำลองที่สร้าง (Model Listing)

สถาบันวิทยบริการ  
จุฬาลงกรณ์มหาวิทยาลัย



ก. 1 รายละเอียดแบบจำลองที่สร้าง (Model Listing) (เที่ยวบิน NG 008)

```

09      CREATE,      1,1;
19      ASSIGN:      Cri=Disc(0.33,2,0.666,3,1,4);
                    i=1;
489     DELAY:      0.0001;
29      QUEUE,      Open;
39      SCAN:
                    (((Nq(1)+Nq(2)+Nq(3)+Nq(4)+Nq(5))/(5-Empt))>=Cri) .and. (((Nq(1)+Nq(2)+Nq(3)
49      WHILE:      i<=5;
59      BRANCH,      1:
                    If, List(i)==0, 69, Yes:
                    Else, 88, Yes:
69      ASSIGN:      List(i)=1;
                    Empt=Empt-1;
                    i=6;
279     ASSIGN:      y=0;
79      ENDWHILE: NEXT(19);

89      ASSIGN:      i=i+1; NEXT(279);

99      CREATE,      5,0.5;
169     ASSIGN:      B=B+1;
                    i=B;
499     DELAY:      0.0001;
109     QUEUE,      PreSet(i);
119     SCAN:      List(i)<>0;
309     BRANCH,      1:
                    If, i==1, 269, Yes:
                    Else, 299, Yes:

269     DISPOSE:

299     DELAY:      0.55;
129     QUEUE,      CloseSet(i);
139     SCAN:      Nq(i)==0;
149     ASSIGN:      Empt=Empt+1;
                    List(i)=0; NEXT(109);

329     CREATE,      1,20:expo(.833),70:MARK(TimeIn);
359     BRANCH, :
                    If, Tnow<=80, 159, Yes:
                    Else, 389, Yes:

159     ASSIGN:      i=1;
                    y=200;
                    xx=0;

509     DELAY:      0.0001;
179     WHILE:      i<=5;
189     BRANCH,      1:
                    If, (List(i)<>0) .and. (nq(i)<y), 199, Yes:
                    Else, 219, Yes:

199     ASSIGN:      y=nq(i);
                    xx=i;
                    i=i+1;

289     ASSIGN:      QueueSet(xx);
209     ENDWHILE:
319     QUEUE,      1:
229     SEIZE,      ManSet(xx), 1;

239     DELAY:
                    cont(.01,.85,.28,1.33,.49,1.83,.63,2.33,.74,2.83,.81,3.33,.86,3.83,.90,4.3

249     RELEASE:    ManSet(xx), 1;
399     TALLY:      Overall Flow Time, INT(TimeIn), 1;
479     ASSIGN:      a1=Tnow-TimeIn;
                    a2=a2+a1;
                    b1=b1+1;
                    b2=b2+b1;
                    C1, 1;

469     COUNT:
259     DISPOSE:

219     ASSIGN:      m=0; NEXT(289);

389     DISPOSE:

339     CREATE,      1,80:expo(.549),130:MARK(TimeIn);
369     BRANCH, :
                    If, Tnow<=120, 159, Yes:
                    Else, 389, Yes:

349     CREATE,      1,120:expo(.645),50:MARK(TimeIn);
379     BRANCH, :
                    If, Tnow<=140, 159, Yes:
                    Else, 389, Yes:

409     CREATE,      1,0:expo(1.176),50:MARK(TimeIn);
419     BRANCH, :
                    If, Tnow<=20, 159, Yes:
                    Else, 389, Yes:

```

ก.1 (ต่อ)

```
42$ CREATE, 1,0:5,30;  
44$ ASSIGN: C=C+1;  
43$ WRITE, F1:  
Tnow,  
Nq(1),  
Nq(2),  
Nq(3),  
Nq(4),  
Nq(5),  
(Nq(1)+Nq(2)+Nq(3)+Nq(4)+Nq(5))/(5-Empty),  
a2,  
b2;  
45$ DISPOSE;
```



สถาบันวิทยบริการ  
จุฬาลงกรณ์มหาวิทยาลัย

## ก.1 (ต่อ)

PROJECT, Check in counter Flight NG008 . sc 1130 pm. mar1. 98,Sachar Thanasrivanitchai,10/30/1998,

ATTRIBUTES: 1,i:  
2,y:  
3,xx:  
4,TimeIn:  
5,a1:  
6,b1;

FILES: 1,F1,"c:\sasha\simulation-output\ng008.xls",Sequential(),WKS File,Error,No,Hold;

VARIABLES: 1,Cri:  
2,Empt,4:  
3,List(5),1,0,0,0,0:  
8,B:  
11,C:  
12,a2:  
13,b2;

QUEUES: 1,Q1,FIFO:  
2,Q2,FIFO:  
3,Q3,FIFO:  
4,Q4,FIFO:  
5,Q5,FIFO:  
6,Open,FIFO:  
7,Pre1,FIFO:  
8,Pre2,FIFO:  
9,Pre3,FIFO:  
10,Pre4,FIFO:  
11,Pre5,FIFO:  
12,Close1,FIFO:  
13,Close2,FIFO:  
14,Close3,FIFO:  
15,Close4,FIFO:  
16,Close5,FIFO;

RESOURCES: 1,Man1,Capacity(1,):  
2,Man2,Capacity(1,):  
3,Man3,Capacity(1,):  
4,Man4,Capacity(1,):  
5,Man5,Capacity(1,);

COUNTERS: 1,C1,,Replicate;

TALLIES: Overall Flow Time;

DSTATS: 1,nq(1):  
2,nq(2):  
3,nq(3):  
4,nq(4):  
5,nq(5):  
6,nr(1):  
7,nr(2):  
8,nr(3):  
9,nr(4):  
10,nr(5);

REPLICATE, 30,0.0,140,Yes,Yes,0.0;

SETS: 1,QueueSet,Q1,Q2,Q3,Q4,Q5:  
2,PreSet,Pre1,Pre2,Pre3,Pre4,Pre5:  
3,CloseSet,Close1,Close2,Close3,closed4,Close5:  
4,ManSet,Man1,Man2,Man3,Man4,Man5;

ก. 2 รายละเอียดแบบจำลองที่สร้าง (Model Listing) (เทชวบิน SQ 880)

```

06 CREATE,          1, 1: .05;
18 ASSIGN:         Cri=Disc(0.50, 2, 1, 3);
                   i=1;
29 QUEUE,          Open;
38 SCAN:          (((Nq(1)+Nq(2)+Nq(3)+Nq(4))/(4-Empt))>=Cri) .and. (((Nq(1)+Nq(2)+Nq(3)+Nq(4)
48 WHILE:         i<=4;
59 BRANCH,        1:
                   If, List(i)=0, 68, Yes:
                   Else, 88, Yes:
                   List(i)=1;
68 ASSIGN:         Empt=Empt-1;
                   i=6;
27$ ASSIGN:        y=0;
79 ENDWHILE: NEXT(19);

89 ASSIGN:         i=i+1: NEXT(27$);

99 CREATE,          4, 0.5;
168 ASSIGN:        B=B+1;
                   i=B;
108 QUEUE,         PreSet(i);
118 SCAN:          List(i)<>0;
308 BRANCH,        1:
                   If, i=1, 26$, Yes:
                   Else, 29$, Yes:

26$ DISPOSE;

29$ DELAY:         0.55;
129 QUEUE,         CloseSet(i);
138 SCAN:          Nq(i)=0;
148 ASSIGN:        Empt=Empt+1;
                   List(i)=0: NEXT(10$);

32$ CREATE,        1, 54: expo(2.500), 70: MARK(TimeIn);
348 BRANCH, :     If, Tnow<=94, 15$, Yes:
                   Else, 36$, Yes:

158 ASSIGN:        i=1;
                   y=200;
                   XX=0;
                   i<=4;
178 WHILE:        1:
188 BRANCH,        If, (List(i)<>0) .and. (nq(i)<y); 19$, Yes:
                   Else, 218, Yes:

198 ASSIGN:        y=nq(i);
                   xx=i;
                   i=i+1;

288 ASSIGN:        ENDWHILE;
208 QUEUE,         QueueSet(xx);
318 SEIZE,         1:
228 ManSet(xx), 1;
238 DELAY:         cont(.01, 1.02, .29, 1.5, .5, 2, .65, 2.5, .75, 3, .82, 3.5, .91, 4.5, .96, 5.5, .98, 7, 1, 9)
248 RELEASE:       ManSet(xx), 1;
378 TALLY:         Overall Flow Time, INT(TimeIn), 1;
458 ASSIGN:        a1=Tnow-TimeIn;
                   a2=a2+a1;
                   b1=b1+1;
                   b2=b2+b1;
                   C1, 1;

448 COUNT:
258 DISPOSE;

218 ASSIGN:        m=0: NEXT(288);

368 DISPOSE;

338 CREATE,        1, 94: expo(3.714), 130: MARK(TimeIn);
358 BRANCH, :     If, Tnow<=112, 15$, Yes:
                   Else, 36$, Yes:

388 CREATE,        1, 0: expo(1.389), 50: MARK(TimeIn);
398 BRANCH, :     If, Tnow<=54, 15$, Yes:
                   Else, 36$, Yes:

408 CREATE,        1, 0: 5, 40;
428 ASSIGN:        C=C+1;
418 WRITE,         Fl:
                   Tnow,
                   Nq(1),
                   Nq(2),
                   Nq(3),
                   Nq(4),

```

## ก.2 (ต่อ)

**PROJECT,** Check in counter Flight SQ880 . sc 0030 am. oct 5.98,Sachar Thanasrivanitchai,10/2/1998,  
**ATTRIBUTES:** 1,i:  
 2,Y:  
 3,xx:  
 4,TimeIn:  
 5,a1:  
 6,b1;  
**FILES:** 1,F1,"c:\sasha\simulation-output\sq880(create open).xls",Sequential(),WKS File,Error,No,H;  
**VARIABLES:** 1,Cr1:  
 2,Empt,3:  
 3,List(4),1,0,0,0:  
 7,B,;  
 11,C:  
 12,a2:  
 13,b2;  
**QUEUES:** 1,Q1,FIFO:  
 2,Q2,FIFO:  
 3,Q3,FIFO:  
 4,Q4,FIFO:  
 5,Open,FIFO:  
 6,Pre1,FIFO:  
 7,Pre2,FIFO:  
 8,Pre3,FIFO:  
 9,Pre4,FIFO:  
 10,Close1,FIFO:  
 11,Close2,FIFO:  
 12,Close3,FIFO:  
 13,Close4,FIFO;  
**RESOURCES:** 1,Man1,Capacity(1,):  
 2,Man2,Capacity(1,):  
 3,Man3,Capacity(1,):  
 4,Man4,Capacity(1,);  
**COUNTERS:** 1,C1,,Replicate;  
**TALLIES:** Overall Flow Time;  
**DSTATS:** 1,nq(1):  
 2,nq(2):  
 3,nq(3):  
 4,nq(4):  
 5,nr(1):  
 6,nr(2):  
 7,nr(3):  
 8,nr(4);  
**REPLICATE,** 45,0.0,112,Yes,Yes,0.0;  
**SETS:** 1,QueueSet,Q1,Q2,Q3,Q4:  
 2,PreSet,Pre1,Pre2,Pre3,Pre4:  
 3,CloseSet,Close1,Close2,Close3,Close4:  
 4,ManSet,Man1,Man2,Man3,Man4;

### ก.3 รายละเอียดแบบจำลองที่สร้าง (Model Listing) (การบินไทย)

```

0$      CREATE,      1,1;
1$      ASSIGN:      Cri=Disc(.5,3,1,4);
                          i=1;
2$      QUEUE,      Open;
3$      SCAN:        ((aaaa/(27-Empt))>=Cri).and.((aaaa/(27-Empt))<=Cri+1);
4$      WHILE:      i<=27;
156$    DELAY:        0.001;
5$      BRANCH,      1;
                          If, List(i)==0, 6$, Yes;
                          Else, 8$, Yes;
6$      ASSIGN:      List(i)=1;
                          Empt=Empt-1;
                          i=28;
27$    ASSIGN:      y=0;
7$      ENDWHILE: NEXT(1$);

8$      ASSIGN:      i=i+1: NEXT(27$);

9$      CREATE,      27, 0.5;
16$     ASSIGN:      B=B+1;
                          i=B;
155$    DELAY:        0.0001;
10$     QUEUE,      PreSet(i);
11$     SCAN:        List(i)<>0;
30$     BRANCH,      1;
                          If, i=1, 26$, Yes;
                          Else, 29$, Yes;

26$     DISPOSE;

29$     DELAY:        0.55;
12$     QUEUE,      CloseSet(i);
13$     SCAN:        Nq(i)==0;
14$     ASSIGN:      Empt=Empt+1;
                          List(i)=0: NEXT(10$);

32$     CREATE,      1, 5: .224, 70: MARK(TimeIN);
35$     BRANCH, :    If, Tnow<=-10, 46$, Yes;
                          Else, 38$, Yes;

46$     ASSIGN:      y=0;
15$     ASSIGN:      i=1;
                          y=200;
                          XX=0;
17$     WHILE:      i<=27;
18$     BRANCH,      1;
                          If, (List(i)<>0).and.(nq(i)<y), 19$, Yes;
                          Else, 21$, Yes;

19$     ASSIGN:      y=nq(i);
                          xx=i;
28$     ASSIGN:      i=i+1;
20$     ENDWHILE;
153$    BRANCH,      1;
                          If, xx==0, 154$, Yes;
                          Else, 146$, Yes;

154$    ASSIGN:      xx=1;
146$    ASSIGN:      aaa=
                          (Nq(1)+Nq(2)+Nq(3)+Nq(4)+Nq(5)+Nq(6)+Nq(7)+Nq(8)+Nq(9)+Nq(10)+Nq(11)+Nq(12)
                          +Nq(13)+Nq(14)+Nq(15)+Nq(16)+Nq(17)+Nq(18)+Nq(19)+Nq(20)+Nq(21)+Nq(22)+Nq(23)+Nq(24)+Nq(25)+Nq(26)+Nq(27));

31$     QUEUE,      QueueSet(xx);
22$     SEIZE,      1;
                          ManSet(xx), 1;
145$    ASSIGN:      aaa=(Nq(1)+Nq(2)+Nq(3)+Nq(4)+Nq(5)+Nq(6)+Nq(7)+Nq(8)+Nq(9)+Nq(10)+Nq(11)+Nq(12)
                          +Nq(13)+Nq(14)+Nq(15)+Nq(16)+Nq(17)+Nq(18)+Nq(19)+Nq(20)+Nq(21)+Nq(22)+Nq(23)+Nq(24)+Nq(25)+Nq(26)+Nq(27));
23$     DELAY:      cont(.01, 1.18, .22, 1.67, .39, 2.17, .53, 2.67, .63, 3.17, .78, 4.17, .86, 5.17, .94, 6.6);
24$     RELEASE:    ManSet(xx), 1;
39$     TALLY:      Overall Flow Time, INT(TimeIn), 1;
152$    ASSIGN:      a1=Tnow-TimeIn;
                          a2=a2+a1;
                          b1=b1+1;
                          b2=b2+b1;

151$    COUNT:      Cl, 1;
25$     DISPOSE;

21$     ASSIGN:      m=1: NEXT(28$);

38$     DISPOSE;

33$     CREATE,      1, 10: .212, 70: MARK(TimeIn);
36$     BRANCH, :    If, Tnow<=-15, 46$, Yes;
                          Else, 38$, Yes;

```

## ก.3 (ต่อ)

```

34$ CREATE, 1,15:.206,70:MARK(TimeIn);
37$ BRANCH,: If,Tnow<=20,46$,Yes:
Else,38$,Yes:

40$ CREATE, 1,0:.256,70:MARK(TimeIn);
41$ BRANCH,: If,Tnow<=5,46$,Yes:
Else,38$,Yes:

42$ CREATE, 1,20:.318,70:MARK(TimeIn);
43$ BRANCH,: If,Tnow<=25,46$,Yes:
Else,38$,Yes:

44$ CREATE, 1,25:.321,70:MARK(TimeIn);
45$ BRANCH,: If,Tnow<=30,46$,Yes:
Else,38$,Yes:

47$ CREATE, 1,35:.628,70:MARK(TimeIn);
50$ BRANCH,: If,Tnow<=40,60$,Yes:
Else,53$,Yes:
60$ ASSIGN: y=0:NEXT(15$);
53$ DISPOSE:

48$ CREATE, 1,40:.371,70:MARK(TimeIn);
51$ BRANCH,: If,Tnow<=45,60$,Yes:
Else,53$,Yes:

49$ CREATE, 1,45:.320,70:MARK(TimeIn);
52$ BRANCH,: If,Tnow<=50,60$,Yes:
Else,53$,Yes:

54$ CREATE, 1,30:.478,70:MARK(TimeIn);
55$ BRANCH,: If,Tnow<=35,60$,Yes:
Else,53$,Yes:

56$ CREATE, 1,50:.237,70:MARK(TimeIn);
57$ BRANCH,: If,Tnow<=55,60$,Yes:
Else,53$,Yes:

58$ CREATE, 1,55:.212,70:MARK(TimeIn);
59$ BRANCH,: If,Tnow<=60,60$,Yes:
Else,53$,Yes:

61$ CREATE, 1,65:.178,70:MARK(TimeIn);
64$ BRANCH,: If,Tnow<=70,74$,Yes:
Else,67$,Yes:
74$ ASSIGN: y=0:NEXT(15$);
67$ DISPOSE:

62$ CREATE, 1,70:.172,70:MARK(TimeIn);
65$ BRANCH,: If,Tnow<=75,74$,Yes:
Else,67$,Yes:

63$ CREATE, 1,75:.173,70:MARK(TimeIn);
66$ BRANCH,: If,Tnow<=80,74$,Yes:
Else,67$,Yes:

68$ CREATE, 1,60:.187,70:MARK(TimeIn);
69$ BRANCH,: If,Tnow<=65,74$,Yes:
Else,67$,Yes:

70$ CREATE, 1,80:.149,70:MARK(TimeIn);
71$ BRANCH,: If,Tnow<=85,74$,Yes:
Else,67$,Yes:

72$ CREATE, 1,85:.142,70:MARK(TimeIn);
73$ BRANCH,: If,Tnow<=90,74$,Yes:
Else,67$,Yes:

75$ CREATE, 1,95:.134,70:MARK(TimeIn);
78$ BRANCH,: If,Tnow<=100,88$,Yes:
Else,81$,Yes:
88$ ASSIGN: y=0:NEXT(15$);
81$ DISPOSE:

76$ CREATE, 1,100:.112,70:MARK(TimeIn);
79$ BRANCH,: If,Tnow<=105,88$,Yes:
Else,81$,Yes:

```

## ก. 3 (ต่อ)

```

77$ CREATE, 1,105:.114,70:MARK(TimeIn);
80$ BRANCH,: If,Tnow<=110,88$,Yes:
Else,81$,Yes;

82$ CREATE, 1,90:.120,70:MARK(TimeIn);
83$ BRANCH,: If,Tnow<=95,88$,Yes:
Else,81$,Yes;

84$ CREATE, 1,110:.100,70:MARK(TimeIn);
85$ BRANCH,: If,Tnow<=115,88$,Yes:
Else,81$,Yes;

86$ CREATE, 1,115:.100,70:MARK(TimeIn);
87$ BRANCH,: If,Tnow<=120,88$,Yes:
Else,81$,Yes;

89$ CREATE, 1,125:.095,70:MARK(TimeIn);
92$ BRANCH,: If,Tnow<=130,102$,Yes:
Else,95$,Yes;
102$ ASSIGN: y=0:NEXT(15$);
95$ DISPOSE;

90$ CREATE, 1,130:.111,70:MARK(TimeIn);
93$ BRANCH,: If,Tnow<=135,102$,Yes:
Else,95$,Yes;

91$ CREATE, 1,135:.121,70:MARK(TimeIn);
94$ BRANCH,: If,Tnow<=140,102$,Yes:
Else,95$,Yes;

96$ CREATE, 1,120:.107,70:MARK(TimeIn);
97$ BRANCH,: If,Tnow<=125,102$,Yes:
Else,95$,Yes;

98$ CREATE, 1,140:.160,70:MARK(TimeIn);
99$ BRANCH,: If,Tnow<=145,102$,Yes:
Else,95$,Yes;

100$ CREATE, 1,145:.152,70:MARK(TimeIn);
101$ BRANCH,: If,Tnow<=150,102$,Yes:
Else,95$,Yes;

103$ CREATE, 1,155:.172,70:MARK(TimeIn);
106$ BRANCH,: If,Tnow<=160,116$,Yes:
Else,109$,Yes;
116$ ASSIGN: y=0:NEXT(15$);
109$ DISPOSE;

104$ CREATE, 1,160:.147,70:MARK(TimeIn);
107$ BRANCH,: If,Tnow<=165,116$,Yes:
Else,109$,Yes;

105$ CREATE, 1,165:.159,70:MARK(TimeIn);
108$ BRANCH,: If,Tnow<=170,116$,Yes:
Else,109$,Yes;

110$ CREATE, 1,150:.173,70:MARK(TimeIn);
111$ BRANCH,: If,Tnow<=155,116$,Yes:
Else,109$,Yes;

112$ CREATE, 1,170:.142,70:MARK(TimeIn);
113$ BRANCH,: If,Tnow<=175,116$,Yes:
Else,109$,Yes;

114$ CREATE, 1,175:.158,70:MARK(TimeIn);
115$ BRANCH,: If,Tnow<=180,116$,Yes:
Else,109$,Yes;

117$ CREATE, 1,185:.150,70:MARK(TimeIn);
120$ BRANCH,: If,Tnow<=190,130$,Yes:
Else,123$,Yes;
130$ ASSIGN: y=0:NEXT(15$);
123$ DISPOSE;

118$ CREATE, 1,190:.153,70:MARK(TimeIn);
121$ BRANCH,: If,Tnow<=195,130$,Yes:
Else,123$,Yes;

```



## ก.3 (ต่อ)

```

119$ CREATE, 1,195:.146,70:MARK(TimeIn);
122$ BRANCH,: If,Tnow<=200,130$,Yes:
Else,123$,Yes;

124$ CREATE, 1,180:.154,70:MARK(TimeIn);
125$ BRANCH,: If,Tnow<=185,130$,Yes:
Else,123$,Yes;

126$ CREATE, 1,200:.164,70:MARK(TimeIn);
127$ BRANCH,: If,Tnow<=205,130$,Yes:
Else,123$,Yes;

128$ CREATE, 1,205:.193,70:MARK(TimeIn);
129$ BRANCH,: If,Tnow<=210,130$,Yes:
Else,123$,Yes;

131$ CREATE, 1,215:.430,70:MARK(TimeIn);
134$ BRANCH,: If,Tnow<=220,144$,Yes:
Else,137$,Yes;
144$ ASSIGN: y=0:NEXT(15$);
137$ DISPOSE;

132$ CREATE, 1,220:.746,70:MARK(TimeIn);
135$ BRANCH,: If,Tnow<=225,144$,Yes:
Else,137$,Yes;

133$ CREATE, 1,225:.746,70:MARK(TimeIn);
136$ BRANCH,: If,Tnow<=230,144$,Yes:
Else,137$,Yes;

138$ CREATE, 1,210:.410,70:MARK(TimeIn);
139$ BRANCH,: If,Tnow<=215,144$,Yes:
Else,137$,Yes;

140$ CREATE, 1,230:.541,70:MARK(TimeIn);
141$ BRANCH,: If,Tnow<=235,144$,Yes:
Else,137$,Yes;

142$ CREATE, 1,235:.541,70:MARK(TimeIn);
143$ BRANCH,: If,Tnow<=240,144$,Yes:
Else,137$,Yes;

147$ CREATE, 1,0:5,50:
149$ ASSIGN: C=C+1;
148$ WRITE, Fl:
Tnow,
Nq(1),
Nq(2),
Nq(3),
Nq(4),
Nq(5),
Nq(6),
Nq(7),
Nq(8),
Nq(9),
Nq(10),
Nq(11),
Nq(12),
Nq(13),
Nq(14),
Nq(15),
Nq(16),
Nq(17),
Nq(18),
Nq(19),
Nq(20),
Nq(21),
Nq(22),
Nq(23),
Nq(24),
Nq(25),
Nq(26),
Nq(27),
Nq(1)+Nq(2)+Nq(3)+Nq(4)+Nq(5)+Nq(6)+Nq(7)+Nq(8)+Nq(9)+Nq(10)+Nq(11)+Nq(12)+
Nq(14)+Nq(15)+Nq(16)+Nq(17)+Nq(18)+Nq(19)+Nq(20)+Nq(21)+Nq(22)+Nq(23)+Nq(2
(27-Empt),
a2,
b2;

150$ DISPOSE;

```



## ก. 3 (ต่อ)

65, Close9, FIFO:  
 66, Close10, FIFO:  
 67, Close11, FIFO:  
 68, Close12, FIFO:  
 69, Close13, FIFO:  
 70, Close14, FIFO:  
 71, Close15, FIFO:  
 72, Close16, FIFO:  
 73, Close17, FIFO:  
 74, Close18, FIFO:  
 75, Close19, FIFO:  
 76, Close20, FIFO:  
 77, Close21, FIFO:  
 78, Close22, FIFO:  
 79, Close23, FIFO:  
 80, Close24, FIFO:  
 81, Close25, FIFO:  
 82, Close26, FIFO:  
 83, Close27, FIFO;

RESOURCES: 1, Man1, Capacity(1,):  
 2, Man2, Capacity(1,):  
 3, Man3, Capacity(1,):  
 4, Man4, Capacity(1,):  
 5, Man5, Capacity(1,):  
 6, Man6, Capacity(1,):  
 7, Man7, Capacity(1,):  
 8, Man8, Capacity(1,):  
 9, Man9, Capacity(1,):  
 10, Man10, Capacity(1,):  
 11, Man11, Capacity(1,):  
 12, Man12, Capacity(1,):  
 13, Man13, Capacity(1,):  
 14, Man14, Capacity(1,):  
 15, Man15, Capacity(1,):  
 16, man16, Capacity(1,):  
 17, Man17, Capacity(1,):  
 18, Man18, Capacity(1,):  
 19, Man19, Capacity(1,):  
 20, Man20, Capacity(1,):  
 21, Man21, Capacity(1,):  
 22, Man22, Capacity(1,):  
 23, Man23, Capacity(1,):  
 24, Man24, Capacity(1,):  
 25, Man25, Capacity(1,):  
 26, Man26, Capacity(1,):  
 27, Man27, Capacity(1,):

COUNTERS: 1, Cl,, Replicate;

TALLIES: Overall Flow Time;

DSTATS: 1, nq(1):  
 2, nq(2):  
 3, nq(3):  
 4, nq(4):  
 5, nq(5):  
 6, nq(6):  
 7, nq(7):  
 8, nq(8):  
 9, nq(9):  
 10, nq(10):  
 11, nq(11):  
 12, nq(12):  
 13, nq(13):  
 14, nq(14):  
 15, nq(15):  
 16, nq(16):  
 17, nq(17):  
 18, nq(18):  
 19, nq(19):  
 20, nq(20):  
 21, nq(21):  
 22, nq(22):  
 23, nq(23):  
 24, nq(24):  
 25, nq(25):  
 26, nq(26):  
 27, nq(27):  
 28, nr(1):  
 29, nr(2):  
 30, Nr(3):  
 31, nr(4):  
 32, nr(5):

## ก. 3 (ต่อ)

33,nr(6):  
 34,nr(7):  
 35,nr(8):  
 36,nr(9):  
 37,nr(10):  
 38,nr(11):  
 39,nr(12):  
 40,nr(13):  
 41,nr(14):  
 42,nr(15):  
 43,nr(16):  
 44,nr(17):  
 45,nr(18):  
 46,nr(19):  
 47,nr(20):  
 48,nr(21):  
 49,nr(22):  
 50,nr(23):  
 51,nr(24):  
 52,nr(25):  
 53,nr(26):  
 54,nr(27):

REPLICATE, 30,0.0,240,Yes,Yes,0.0;

SETS: 1,QueueSet,Q1,Q2,Q3,Q4,Q5,Q6,Q7,Q8,Q9,Q10,Q11,Q12,Q13,Q14,Q15,Q16,Q17,Q18,Q19,Q20,Q21,Q22,  
 2,PreSet,Pre1,Pre2,Pre3,Pre4,Pre5,Pre6,Pre7,Pre8,Pre9,Pre10,Pre11,Pre12,Pre13,Pre14,Pre15,  
 Pre20,Pre21,Pre22,Pre23,Pre24,Pre25,Pre26,Pre27;  
 3,CloseSet,Close1,Close2,Close3,Close4,Close5,Close6,Close7,Close8,Close9,Close10,Close11,  
 Close15,Close16,Close17,Close18,Close19,Close20,Close21,Close22,Close23,Close24,Close25,C1  
 4,ManSet,Man1,Man2,Man3,Man4,Man5,Man6,Man7,Man8,Man9,Man10,Man11,Man12,Man13,Man14,Man15,  
 Man20,Man21,Man22,Man23,Man24,Man25,Man26,Man27;

สถาบันวิทยบริการ  
 จุฬาลงกรณ์มหาวิทยาลัย

ก. 4 รายละเอียดแบบจำลองที่สร้าง (Model Listing) (คำนวณรอกหนังสือเดินทาง)

```

0$      CREATE,      1,1;
1$      ASSIGN:      Cri=Diac(0.500,3,1,4);
                    i=1;
151$    DELAY:      0.0001;
2$      QUEUE,      Open;
3$      SCAN:      ((aaa/(12-Empt))>=Cri).and.((aaa/(12-Empt))<=Cri+1);
4$      WHILE:      i<=12;
5$      BRANCH,      1;
                    If, List(i)==0, 6$, Yes;
                    Else, 8$, Yes;
6$      ASSIGN:      List(i)=1;
                    Empt=Empt-1;
                    i=13;
27$    ASSIGN:      y=0;
7$      ENDWHILE: NEXT(1$);

8$      ASSIGN:      i=i+1:NEXT(27$);

9$      CREATE,      12,0.5;
16$    ASSIGN:      B=B+1;
                    i=B;
152$   DELAY:      0.0001;
10$    QUEUE,      PreSet(i);
11$    SCAN:      List(i)<>0;
30$    BRANCH,      1;
                    If, i=-1, 26$, Yes;
                    Else, 29$, Yes;

26$    DISPOSE;

29$    DELAY:      0.55;
12$    QUEUE,      CloseSet(i);
13$    SCAN:      Nq(i)=0;
14$    ASSIGN:      Empt=Empt+1;
                    List(i)=0:NEXT(10$);

32$    CREATE,      1,5:.167,70:MARK(TimeIN);
35$    BRANCH,      1;
                    If, Tnow<=10, 46$, Yes;
                    Else, 38$, Yes;

46$    ASSIGN:      y=0;
15$    ASSIGN:      i=1;
                    y=200;
                    XX=0;

153$   DELAY:      0.0001;
17$    WHILE:      i<=12;
18$    BRANCH,      1;
                    If, (List(i)<>0).and.(nq(i)<y), 19$, Yes;
                    Else, 21$, Yes;

19$    ASSIGN:      y=nq(i);
                    xx=1;
                    i=i+1;

28$    ASSIGN:      ENDWHILE;
20$    BRANCH,      1;
                    If, xx==0, 155$, Yes;
                    Else, aa1, Yes;

155$   ASSIGN:      xx=1;
aa1$   ASSIGN:      aaa=(Nq(1)+Nq(2)+Nq(3)+Nq(4)+nq(5)+Nq(6)+Nq(7)+Nq(8)+Nq(9)+Nq(10)+Nq(11)+N
31$   QUEUE,      Queueset(xx);
22$   SEIZE,      1;
                    ManSet(xx), 1;
aa2$   ASSIGN:      aaa=(Nq(1)+Nq(2)+Nq(3)+Nq(4)+Nq(5)+Nq(6)+Nq(7)+Nq(8)+Nq(9)+Nq(10)+Nq(11)+N
23$   DELAY:      cont(.01,.35,.25,.5,.44,.67,.59,.83,.69,1,.77,1.17,.87,1.5,.93,1.83,.97,2.
24$   RELEASE:      ManSet(xx),1;
39$   TALLY:      Overall Flow Time,TNT(TimeIn),1;
149$   COUNT:      Cl,1;
150$   ASSIGN:      a1=Tnow-TimeIn;
                    a2=a2+a1;
                    b1=b1+1;
                    b2=b2+b1;

25$    DISPOSE;

21$    ASSIGN:      m=1:NEXT(28$);

38$    DISPOSE;

33$    CREATE,      1,10:.188,70:MARK(TimeIn);
36$    BRANCH,      1;
                    If, Tnow<=15, 46$, Yes;
                    Else, 38$, Yes;

```

## ท. 4 (ต่อ)

34\$	CREATE,	1, 15: .200, 70:MARK(TimeIn);
37\$	BRANCH,	1:
		If, Tnow<=20, 46\$, Yes:
		Else, 38\$, Yes;
40\$	CREATE,	1, 0: .171, 70:MARK(TimeIn);
41\$	BRANCH,	1:
		If, Tnow<=5, 46\$, Yes:
		Else, 38\$, Yes;
42\$	CREATE,	1, 20: .206, 70:MARK(TimeIn);
43\$	BRANCH,	1:
		If, Tnow<=25, 46\$, Yes:
		Else, 38\$, Yes;
44\$	CREATE,	1, 25: .206, 70:MARK(TimeIn);
45\$	BRANCH,	1:
		If, Tnow<=30, 46\$, Yes:
		Else, 38\$, Yes;
47\$	CREATE,	1, 35: .196, 70:MARK(TimeIn);
50\$	BRANCH,	1:
		If, Tnow<=40, 60\$, Yes:
		Else, 53\$, Yes;
60\$	ASSIGN:	y=0:NEXT(15\$);
53\$	DISPOSE;	
48\$	CREATE,	1, 40: .190, 70:MARK(TimeIn);
51\$	BRANCH,	1:
		If, Tnow<=45, 60\$, Yes:
		Else, 53\$, Yes;
49\$	CREATE,	1, 45: .182, 70:MARK(TimeIn);
52\$	BRANCH,	1:
		If, Tnow<=50, 60\$, Yes:
		Else, 53\$, Yes;
54\$	CREATE,	1, 30: .215, 70:MARK(TimeIn);
55\$	BRANCH,	1:
		If, Tnow<=35, 60\$, Yes:
		Else, 53\$, Yes;
56\$	CREATE,	1, 50: .158, 70:MARK(TimeIn);
57\$	BRANCH,	1:
		If, Tnow<=55, 60\$, Yes:
		Else, 53\$, Yes;
58\$	CREATE,	1, 55: .144, 70:MARK(TimeIn);
59\$	BRANCH,	1:
		If, Tnow<=60, 60\$, Yes:
		Else, 53\$, Yes;
61\$	CREATE,	1, 65: .127, 70:MARK(TimeIn);
64\$	BRANCH,	1:
		If, Tnow<=70, 74\$, Yes:
		Else, 67\$, Yes;
74\$	ASSIGN:	y=0:NEXT(15\$);
67\$	DISPOSE;	
62\$	CREATE,	1, 70: .121, 70:MARK(TimeIn);
65\$	BRANCH,	1:
		If, Tnow<=75, 74\$, Yes:
		Else, 67\$, Yes;
63\$	CREATE,	1, 75: .110, 70:MARK(TimeIn);
66\$	BRANCH,	1:
		If, Tnow<=80, 74\$, Yes:
		Else, 67\$, Yes;
68\$	CREATE,	1, 60: .134, 70:MARK(TimeIn);
69\$	BRANCH,	1:
		If, Tnow<=65, 74\$, Yes:
		Else, 67\$, Yes;
70\$	CREATE,	1, 80: .105, 70:MARK(TimeIn);
71\$	BRANCH,	1:
		If, Tnow<=85, 74\$, Yes:
		Else, 67\$, Yes;
72\$	CREATE,	1, 85: .099, 70:MARK(TimeIn);



## ก. 4 (ต่อ)

```

Else, 109$, Yes;

105$ CREATE, 1, 165: .127, 70: MARK (TimeIn);
108$ BRANCH, 1:
If, Tnow <= 170, 116$, Yes:
Else, 109$, Yes;

110$ CREATE, 1, 150: .110, 70: MARK (TimeIn);
111$ BRANCH, 1:
If, Tnow <= 155, 116$, Yes:
Else, 109$, Yes;

112$ CREATE, 1, 170: .135, 70: MARK (TimeIn);
113$ BRANCH, 1:
If, Tnow <= 175, 116$, Yes:
Else, 109$, Yes;

114$ CREATE, 1, 175: .155, 70: MARK (TimeIn);
115$ BRANCH, 1:
If, Tnow <= 180, 116$, Yes:
Else, 109$, Yes;

117$ CREATE, 1, 185: .170, 70: MARK (TimeIn);
120$ BRANCH, 1:
If, Tnow <= 190, 130$, Yes:
Else, 123$, Yes;

130$ ASSIGN: y=0: NEXT (15$);

123$ DISPOSE;

118$ CREATE, 1, 190: .173, 70: MARK (TimeIn);
121$ BRANCH, 1:
If, Tnow <= 195, 130$, Yes:
Else, 123$, Yes;

119$ CREATE, 1, 195: .172, 70: MARK (TimeIn);
122$ BRANCH, 1:
If, Tnow <= 200, 130$, Yes:
Else, 123$, Yes;

124$ CREATE, 1, 180: .164, 70: MARK (TimeIn);
125$ BRANCH, 1:
If, Tnow <= 185, 130$, Yes:
Else, 123$, Yes;

126$ CREATE, 1, 200: .176, 70: MARK (TimeIn);
127$ BRANCH, 1:
If, Tnow <= 205, 130$, Yes:
Else, 123$, Yes;

128$ CREATE, 1, 205: .712, 70: MARK (TimeIn);
129$ BRANCH, 1:
If, Tnow <= 210, 130$, Yes:
Else, 123$, Yes;

131$ CREATE, 1, 215: .196, 70: MARK (TimeIn);
134$ BRANCH, 1:
If, Tnow <= 220, 144$, Yes:
Else, 137$, Yes;

144$ ASSIGN: y=0: NEXT (15$);

137$ DISPOSE;

132$ CREATE, 1, 220: .212, 70: MARK (TimeIn);
135$ BRANCH, 1:
If, Tnow <= 225, 144$, Yes:
Else, 137$, Yes;

133$ CREATE, 1, 225: .211, 70: MARK (TimeIn);
136$ BRANCH, 1:
If, Tnow <= 230, 144$, Yes:
Else, 137$, Yes;

138$ CREATE, 1, 210: .171, 70: MARK (TimeIn);
139$ BRANCH, 1:
If, Tnow <= 215, 144$, Yes:
Else, 137$, Yes;

140$ CREATE, 1, 230: .229, 70: MARK (TimeIn);
141$ BRANCH, 1:
If, Tnow <= 235, 144$, Yes:
Else, 137$, Yes;

```



## ท.4 (ต่อ)

```

142$      CREATE,      1,235:.251,70:MARK(TimeIn);
143$      BRANCH,      I:
                          If, Tnow<=240,144$, Yes:
                          Else, 137$, Yes;

145$      CREATE,      1,0:5,50;
147$      ASSIGN:      C=C+1;
146$      WRITE,       F1:
                          Tnow,
                          Nq(1),
                          Nq(2),
                          Nq(3),
                          Nq(4),
                          Nq(5),
                          Nq(6),
                          Nq(7),
                          Nq(8),
                          Nq(9),
                          Nq(10),
                          Nq(11),
                          Nq(12),
                          (Nq(1)+Nq(2)+Nq(3)+Nq(4)+Nq(5)+Nq(6)+Nq(7)+Nq(8)+Nq(9)+Nq(10)+Nq(11)+Nq(12)
                          a2,
                          b2;

148$      DISPOSE;

```

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## ก.4 (ต่อ)

PROJECT: Passport Control. From 7.30 to 11.30 pm. Mar 1. 98, Sachar Thanasrivanitchai, 10/22/1

ATTRIBUTES: 1, i:  
2, Y:  
3, xx, :  
4, TimeIn:  
5, a1:  
6, b1:

FILES: 1, Fl, "c:\sasha\simulation-output\passport-control.xls", Sequential(), WKS File, Error, No, Hold

VARIABLES: 1, Cri:  
2, Empt, 11:  
3, List (12), 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0:  
15, B, :  
16, C:  
17, aaa:  
18, a2:  
19, b2:

QUEUES: 1, Q1, FIFO:  
2, Q2, FIFO:  
3, Q3, FIFO:  
4, Q4, FIFO:  
5, Q5, FIFO:  
6, Q6, FIFO:  
7, Q7, FIFO:  
8, Q8, FIFO:  
9, Q9, FIFO:  
10, Q10, FIFO:  
11, Q11, FIFO:  
12, Q12, FIFO:  
13, Open, FIFO:  
14, Pre1, FIFO:  
15, Pre2, FIFO:  
16, Pre3, FIFO:  
17, Pre4, FIFO:  
18, Pre5, FIFO:  
19, Pre6, FIFO:  
20, Pre7, FIFO:  
21, Pre8, FIFO:  
22, Pre9, FIFO:  
23, Pre10, FIFO:  
24, Pre11, FIFO:  
25, Pre12, FIFO:  
26, Close1, FIFO:  
27, Close2, FIFO:  
28, Close3, FIFO:  
29, Close4, FIFO:  
30, Close5, FIFO:  
31, Close6, FIFO:  
32, Close7, FIFO:  
33, Close8, FirstInFirstOut:  
34, Close9, FirstInFirstOut:  
35, Close10, FirstInFirstOut:  
36, Close11, FirstInFirstOut:  
37, Close12, FirstInFirstOut:

RESOURCES: 1, Man1, Capacity(1,):  
2, Man2, Capacity(1,):  
3, Man3, Capacity(1,):  
4, Man4, Capacity(1,):  
5, Man5, Capacity(1,):  
6, Man6, Capacity(1,):  
7, Man7, Capacity(1,):  
8, Man8, Capacity(1,):  
9, Man9, Capacity(1,):  
10, Man10, Capacity(1,):  
11, Man11, Capacity(1,):  
12, Man12, Capacity(1,):

COUNTERS: 1, Cl, , Replicate:

TALLIES: Overall Flow Time;

DSTATS: 1, nq(1):  
2, nq(2):  
3, nq(3):  
4, nq(4):  
5, nq(5):  
6, nq(6):  
7, nq(7):  
8, nq(8):  
9, nq(9):

## พ. 4 (ต่อ)

10,nq(10):  
 11,nq(11):  
 12,nq(12):  
 13,nr(1):  
 14,nr(2):  
 15,Nr(3):  
 16,nr(4):  
 17,nr(5):  
 18,nr(6):  
 19,nr(7):  
 20,nr(8):  
 21,nr(9):  
 22,nr(10):  
 23,nr(11):  
 24,nr(12):

REPLICATE, 30,0.0,240,Yes,Yes,0.0:

SETS:  
 1,QueueSet,Q1,Q2,Q3,Q4,Q5,Q6,Q7,Q8,Q9,Q10,Q11,Q12:  
 2,PreSet,Pre1,Pre2,Pre3,Pre4,Pre5,Pre6,Pre7,Pre8,Pre9,Pre10,Pre11,Pre12:  
 3,CloseSet,Close1,Close2,Close3,Close4,Close5,Close6,Close7,Close8,Close9,Close10,Close11,  
 4,ManSet,Man1,Man2,Man3,Man4,Man5,Man6,Man7,Man8,Man9,Man10,Man11,Man12:



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ค. 5 รายละเอียดแบบจำลองที่สร้าง (Model Listing) (ด้านตรวจคนเข้าเมือง)

```

09      CREATE,      1, 1: .05;
14      ASSIGN:      Cri=Disc(0.25, 8, .5, 10, .75, 12, 1, 14);
                    i=1;
187$    DELAY:      0.0001;
25      QUEUE,      Open;
39      SCAN:      ((aaa/(19-Empt))>=Cri) .and. ((aaa/(19-Empt))<=Cri+1);
48      WHILE:      i<=19;
188$    DELAY:      0.0001;
59      BRANCH,     1:
                    If, List(i)==0, 6$, Yes:
                    Else, 8$, Yes:
69      ASSIGN:      List(i)=1;
                    Empt=Empt-1;
                    i=20;
27$    ASSIGN:      y=0;
79      ENDWHILE: NEXT(18);

89      ASSIGN:      i=i+1: NEXT(27$);

99      CREATE,      19, 0.5;
169     ASSIGN:      B=B+1;
                    i=B;
45$    DELAY:      0.0001;
109     QUEUE,      PreSet(i);
119     SCAN:      List(i)<>0;
309     BRANCH,     1:
                    If, i=1, 26$, Yes:
                    If, i=2, 26$, Yes:
                    If, i=3, 26$, Yes:
                    If, i=4, 26$, Yes:
                    If, i=5, 26$, Yes:
                    Else, 29$, Yes:

269     DISPOSE;

299     DELAY:      0.55;
129     QUEUE,      CloseSet(i);
139     SCAN:      Nq(i)==0;
149     ASSIGN:      Empt=Empt+1;
                    List(i)=0: NEXT(109);

349     CREATE,      1, 8: .264, 300: MARK(TimeIn);
359     BRANCH,     1:
                    If, Tnow<=10, 38$, Yes:
                    Else, 32$, Yes:

389     ASSIGN:      y=0;
159     ASSIGN:      i=1;
                    y=200;
                    XX=0;

186$    DELAY:      0.0001;
179     WHILE:      i<=19;
189     BRANCH,     1:
                    If, (List(i)<>0) .and. (nq(i)<y), 19$, Yes:
                    Else, 21$, Yes:

199     ASSIGN:      y=nq(i);
                    xx=i;
                    i=i+1;

289     ASSIGN:      i=i+1;
209     ENDWHILE;
469     BRANCH,     1:
                    If, xx==0, 47$, Yes:
                    Else, aa1, Yes:

479     ASSIGN:      xx=1;
aaa1    ASSIGN:      aaa=
                    (Nq(1)+Nq(2)+Nq(3)+Nq(4)+Nq(5)+Nq(6)+Nq(7)+Nq(8)+Nq(9)+Nq(10)+Nq(11)+Nq(12)
                    Queueset(xx);

319     QUEUE,      1:
229     SEIZE,      ManSet(xx), 1;

aaa2    ASSIGN:      aaa=
                    (Nq(1)+Nq(2)+Nq(3)+Nq(4)+Nq(5)+Nq(6)+Nq(7)+Nq(8)+Nq(9)+Nq(10)+Nq(11)+Nq(12)
                    cont(.01, .67, .31, .88, .52, 1, .67, 1.17, .77, 1.33, .89, 1.67, .95, 2, .98, 2.33, .99, 2.

239     DELAY:      ManSet(xx), 1;
249     RELEASE:    Overall Flow Time, INT(TimeIn), 1;
339     TALLY:      Cl, 1;
439     COUNT:      a1=Tnow-TimeIn;
449     ASSIGN:      a2=a2+a1;
                    b1=b1+1;
                    b2=b2+b1;

259     DISPOSE;

219     ASSIGN:      m=1: NEXT(289);

329     DISPOSE;

```

## ท. 5 (ต่อ)

```

369      CREATE,      1, 10: .070, 300: MARK(TimeIn);
379      BRANCH,      1:
                          If, Tnow<=12, 38$, Yes:
                          Else, 32$, Yes;

399      CREATE,      1, 0: 5, 38;
419      ASSIGN:      C=C+1;
409      WRITE,       F1:
                          Tnow,
                          Nq(1),
                          Nq(2),
                          Nq(3),
                          Nq(4),
                          Nq(5),
                          Nq(6),
                          Nq(7),
                          Nq(8),
                          Nq(9),
                          Nq(10),
                          Nq(11),
                          Nq(12),
                          Nq(13),
                          Nq(14),
                          Nq(15),
                          Nq(16),
                          Nq(17),
                          Nq(18),
                          Nq(19),
                          Nq(1)+Nq(2)+Nq(3)+Nq(4)+Nq(5)+Nq(6)+Nq(7)+Nq(8),
                          Nq(9)+Nq(10)+Nq(11)+Nq(12)+Nq(13)+Nq(14)+Nq(15)+Nq(16)+Nq(17)+Nq(18)+Nq(19)
                          19-Empt,
                          a2,
                          b2;

429      DISPOSE;

489      CREATE,      1, 12: .034, 300: MARK(TimeIn);
499      BRANCH,      1:
                          If, Tnow<=14, 38$, Yes:
                          Else, 32$, Yes;

509      CREATE,      1, 16: .055, 300: MARK(TimeIn);
539      BRANCH,      1:
                          If, Tnow<=18, 63$, Yes:
                          Else, 56$, Yes;

639      ASSIGN:      y=0: NEXT(15$);

569      DISPOSE;

519      CREATE,      1, 18: .180, 300: MARK(TimeIn);
549      BRANCH,      1:
                          If, Tnow<=20, 63$, Yes:
                          Else, 56$, Yes;

529      CREATE,      1, 20: .581, 300: MARK(TimeIn);
559      BRANCH,      1:
                          If, Tnow<=22, 63$, Yes:
                          Else, 56$, Yes;

579      CREATE,      1, 14: .032, 300: MARK(TimeIn);
589      BRANCH,      1:
                          If, Tnow<=16, 63$, Yes:
                          Else, 56$, Yes;

599      CREATE,      1, 22: .332, 300: MARK(TimeIn);
609      BRANCH,      1:
                          If, Tnow<=24, 63$, Yes:
                          Else, 56$, Yes;

619      CREATE,      1, 24: .096, 300: MARK(TimeIn);
629      BRANCH,      1:
                          If, Tnow<=26, 63$, Yes:
                          Else, 56$, Yes;

649      CREATE,      1, 26: .044, 300: MARK(TimeIn);
659      BRANCH,      1:
                          If, Tnow<=28, 63$, Yes:
                          Else, 56$, Yes;

669      CREATE,      1, 28: .027, 300: MARK(TimeIn);
679      BRANCH,      1:

```

## ก. 5 (ต่อ)

```

If, Tnow<=30, 63$, Yes:
Else, 56$, Yes:

68$      CREATE,      1, 32: .048, 300: MARK(TimeIn);
71$      BRANCH,      1:
If, Tnow<=34, 77$, Yes:
Else, 74$, Yes:
77$      ASSIGN:      y=0: NEXT(15$);
74$      DISPOSE:

69$      CREATE,      1, 34: .160, 300: MARK(TimeIn);
72$      BRANCH,      1:
If, Tnow<=36, 77$, Yes:
Else, 74$, Yes:

70$      CREATE,      1, 36: .966, 300: MARK(TimeIn);
73$      BRANCH,      1:
If, Tnow<=38, 77$, Yes:
Else, 74$, Yes:

75$      CREATE,      1, 30: .027, 300: MARK(TimeIn);
76$      BRANCH,      1:
If, Tnow<=32, 77$, Yes:
Else, 74$, Yes:

79$      CREATE,      1, 52: .276, 300: MARK(TimeIn);
80$      BRANCH,      1:
If, Tnow<=54, 83$, Yes:
Else, 78$, Yes:
83$      ASSIGN:      y=0: NEXT(15$);
78$      DISPOSE:

81$      CREATE,      1, 54: .073, 300: MARK(TimeIn);
82$      BRANCH,      1:
If, Tnow<=56, 83$, Yes:
Else, 78$, Yes:

84$      CREATE,      1, 56: .036, 300: MARK(TimeIn);
85$      BRANCH,      1:
If, Tnow<=58, 83$, Yes:
Else, 78$, Yes:

86$      CREATE,      1, 58: .033, 300: MARK(TimeIn);
87$      BRANCH,      1:
If, Tnow<=60, 83$, Yes:
Else, 78$, Yes:

88$      CREATE,      1, 62: .188, 300: MARK(TimeIn);
91$      BRANCH,      1:
If, Tnow<=64, 101$, Yes:
Else, 94$, Yes:
101$     ASSIGN:      y=0: NEXT(15$);
94$     DISPOSE:

89$      CREATE,      1, 64: .306, 300: MARK(TimeIn);
92$      BRANCH,      1:
If, Tnow<=66, 101$, Yes:
Else, 94$, Yes:

90$      CREATE,      1, 66: .111, 300: MARK(TimeIn);
93$      BRANCH,      1:
If, Tnow<=68, 101$, Yes:
Else, 94$, Yes:

95$      CREATE,      1, 60: .057, 300: MARK(TimeIn);
96$      BRANCH,      1:
If, Tnow<=62, 101$, Yes:
Else, 94$, Yes:

97$      CREATE,      1, 68: .048, 300: MARK(TimeIn);
98$      BRANCH,      1:
If, Tnow<=70, 101$, Yes:
Else, 94$, Yes:

99$      CREATE,      1, 70: .035, 300: MARK(TimeIn);
100$     BRANCH,      1:
If, Tnow<=72, 101$, Yes:
Else, 94$, Yes:

```

## ท. 5 (ต่อ)

102\$	CREATE,	1, 72: .033, 300: MARK(TimeIn);
103\$	BRANCH,	1:
		If, Tnow<=74, 101\$, Yes:
		Else, 94\$, Yes;
104\$	CREATE,	1, 76: .080, 300: MARK(TimeIn);
107\$	BRANCH,	1:
		If, Tnow<=78, 117\$, Yes:
		Else, 110\$, Yes;
117\$	ASSIGN:	y=0: NEXT(15\$);
110\$	DISPOSE;	
105\$	CREATE,	1, 78: .278, 300: MARK(TimeIn);
108\$	BRANCH,	1:
		If, Tnow<=80, 117\$, Yes:
		Else, 110\$, Yes;
106\$	CREATE,	1, 80: 1.674, 300: MARK(TimeIn);
109\$	BRANCH,	1:
		If, Tnow<=82, 117\$, Yes:
		Else, 110\$, Yes;
111\$	CREATE,	1, 74: .042, 300: MARK(TimeIn);
112\$	BRANCH,	1:
		If, Tnow<=76, 117\$, Yes:
		Else, 110\$, Yes;
113\$	CREATE,	1, 82: .482, 300: MARK(TimeIn);
114\$	BRANCH,	1:
		If, Tnow<=84, 117\$, Yes:
		Else, 110\$, Yes;
115\$	CREATE,	1, 84: .128, 300: MARK(TimeIn);
116\$	BRANCH,	1:
		If, Tnow<=86, 117\$, Yes:
		Else, 110\$, Yes;
118\$	CREATE,	1, 86: .062, 300: MARK(TimeIn);
119\$	BRANCH,	1:
		If, Tnow<=88, 117\$, Yes:
		Else, 110\$, Yes;
120\$	CREATE,	1, 88: .058, 300: MARK(TimeIn);
121\$	BRANCH,	1:
		If, Tnow<=90, 117\$, Yes:
		Else, 110\$, Yes;
122\$	CREATE,	1, 92: .329, 300: MARK(TimeIn);
124\$	BRANCH,	1:
		If, Tnow<=94, 129\$, Yes:
		Else, 126\$, Yes;
129\$	ASSIGN:	y=0: NEXT(15\$);
126\$	DISPOSE;	
123\$	CREATE,	1, 94: 1.982, 300: MARK(TimeIn);
125\$	BRANCH,	1:
		If, Tnow<=96, 129\$, Yes:
		Else, 126\$, Yes;
127\$	CREATE,	1, 90: .100, 300: MARK(TimeIn);
128\$	BRANCH,	1:
		If, Tnow<=92, 129\$, Yes:
		Else, 126\$, Yes;
130\$	CREATE,	.146, 102: .115, 300: MARK(TimeIn);
131\$	BRANCH,	1:
		If, Tnow<=104, 129\$, Yes:
		Else, 126\$, Yes;
132\$	CREATE,	1, 106: .015, 300: MARK(TimeIn);
135\$	BRANCH,	1:
		If, Tnow<=108, 145\$, Yes:
		Else, 138\$, Yes;
145\$	ASSIGN:	y=0: NEXT(15\$);
138\$	DISPOSE;	
133\$	CREATE,	1, 108: .012, 300: MARK(TimeIn);

## ก. 5 (ต่อ)

1368	BRANCH,	1: If, Tnow<=110, 145\$, Yes: Else, 1388\$, Yes;
1348 1378	CREATE, BRANCH,	1, 110: .017, 300: MARK (TimeIn); 1: If, Tnow<=112, 145\$, Yes: Else, 1388\$, Yes;
1398 1408	CREATE, BRANCH,	1, 104: .035, 300: MARK (TimeIn); 1: If, Tnow<=106, 145\$, Yes: Else, 1388\$, Yes;
1418 1428	CREATE, BRANCH,	1, 112: .039, 300: MARK (TimeIn); 1: If, Tnow<=114, 145\$, Yes: Else, 1388\$, Yes;
1438 1448	CREATE, BRANCH,	1, 114: .155, 300: MARK (TimeIn); 1: If, Tnow<=116, 145\$, Yes: Else, 1388\$, Yes;
1468 1478	CREATE, BRANCH,	1, 116: 1.255, 300: MARK (TimeIn); 1: If, Tnow<=118, 145\$, Yes: Else, 1388\$, Yes;
1508 1518	CREATE, BRANCH,	1, 146: .282, 300: MARK (TimeIn); 1: If, Tnow<=148, 149\$, Yes: Else, 1488\$, Yes;
1498	ASSIGN:	y=0: NEXT (158);
1488	DISPOSE;	
1528 1538	CREATE, BRANCH,	1, 148: .075, 300: MARK (TimeIn); 1: If, Tnow<=150, 149\$, Yes: Else, 1488\$, Yes;
1548 1578	CREATE, BRANCH,	1, 152: .031, 300: MARK (TimeIn); 1: If, Tnow<=154, 167\$, Yes: Else, 1608\$, Yes;
1678	ASSIGN:	y=0: NEXT (158);
1608	DISPOSE;	
1558 1588	CREATE, BRANCH,	1, 154: .030, 300: MARK (TimeIn); 1: If, Tnow<=156, 167\$, Yes: Else, 1608\$, Yes;
1568 1598	CREATE, BRANCH,	1, 156: .020, 300: MARK (TimeIn); 1: If, Tnow<=158, 167\$, Yes: Else, 1608\$, Yes;
1618 1628	CREATE, BRANCH,	1, 150: .036, 300: MARK (TimeIn); 1: If, Tnow<=152, 167\$, Yes: Else, 1608\$, Yes;
1638 1648	CREATE, BRANCH,	1, 158: .014, 300: MARK (TimeIn); 1: If, Tnow<=160, 167\$, Yes: Else, 1608\$, Yes;
1658 1668	CREATE, BRANCH,	1, 160: .015, 300: MARK (TimeIn); 1: If, Tnow<=162, 167\$, Yes: Else, 1608\$, Yes;
1688 1698	CREATE, BRANCH,	1, 162: .029, 300: MARK (TimeIn); 1: If, Tnow<=164, 167\$, Yes: Else, 1608\$, Yes;
1708 1738	CREATE, BRANCH,	1, 166: .125, 300: MARK (TimeIn); 1:



## ก. 5 (ต่อ)

```

If, Tnow<=168, 183$, Yes:
Else, 176$, Yes:
y=0:NEXT (15$);

183$    ASSIGN:
176$    DISPOSE;

171$    CREATE,      1, 168:.076, 300:MARK(TimeIn);
174$    BRANCH,      1:
                If, Tnow<=170, 183$, Yes:
                Else, 176$, Yes:

172$    CREATE,      1, 170:.071, 300:MARK(TimeIn);
175$    BRANCH,      1:
                If, Tnow<=172, 183$, Yes:
                Else, 176$, Yes:

177$    CREATE,      1, 164:.085, 300:MARK(TimeIn);
178$    BRANCH,      1:
                If, Tnow<=166, 183$, Yes:
                Else, 176$, Yes:

179$    CREATE,      1, 172:.121, 300:MARK(TimeIn);
180$    BRANCH,      1:
                If, Tnow<=174, 183$, Yes:
                Else, 176$, Yes:

181$    CREATE,      1, 174:.399, 300:MARK(TimeIn);
182$    BRANCH,      1:
                If, Tnow<=176, 183$, Yes:
                Else, 176$, Yes:

184$    CREATE,      1, 176:2.404, 300:MARK(TimeIn);
185$    BRANCH,      1:
                If, Tnow<=178, 183$, Yes:
                Else, 176$, Yes:

```

สถาบันวิทยบริการ  
จุฬาลงกรณ์มหาวิทยาลัย

## ท. 5 (ต่อ)

PROJECT, Immigration. From 12.00 am to 3.00 pm. Mar 1. 98, Sachar Thanasrivanitchai, 11/15/19

ATTRIBUTES: 1, i:  
2, Y:  
3, xx, :  
4, TimeIn:  
5, a1:  
6, b1;

FILES: 1, Fl, "c:\sasha\simulation-output\immigration.xls", Sequential(), WKS File, Error, No, Hold;

VARIABLES: 1, Cri:  
2, Empt, 18:  
3, List (19), 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0:  
22, B, :  
23, C:  
24, aaa:  
25, a2:  
26, b2;

QUEUES: 1, Q1, FIFO:  
2, Q2, FIFO:  
3, Q3, FIFO:  
4, Q4, FIFO:  
5, Q5, FIFO:  
6, Q6, FIFO:  
7, Q7, FIFO:  
8, Q8, FIFO:  
9, Q9, FIFO:  
10, Q10, FIFO:  
11, Q11, FIFO:  
12, Q12, FIFO:  
13, Q13, FIFO:  
14, Q14, FIFO:  
15, Q15, FIFO:  
16, Q16, FIFO:  
17, Q17, FIFO:  
18, Q18, FIFO:  
19, Q19, FIFO:  
20, Open, FIFO:  
21, Pre1, FIFO:  
22, Pre2, FIFO:  
23, Pre3, FIFO:  
24, Pre4, FIFO:  
25, Pre5, FIFO:  
26, Pre6, FIFO:  
27, Pre7, FIFO:  
28, Pre8, FIFO:  
29, Pre9, FIFO:  
30, Pre10, FIFO:  
31, Pre11, FIFO:  
32, Pre12, FIFO:  
33, Pre13, FIFO:  
34, Pre14, FIFO:  
35, Pre15, FIFO:  
36, Pre16, FIFO:  
37, Pre17, FIFO:  
38, Pre18, FIFO:  
39, Pre19, FIFO:  
40, Close1, FIFO:  
41, Close2, FIFO:  
42, Close3, FIFO:  
43, Close4, FIFO:  
44, Close5, FIFO:  
45, Close6, FIFO:  
46, Close7, FIFO:  
47, Close8, FIFO:  
48, Close9, FIFO:  
49, Close10, FIFO:  
50, Close11, FIFO:  
51, Close12, FIFO:  
52, Close13, FIFO:  
53, Close14, FIFO:  
54, Close15, FIFO:  
55, Close16, FIFO:  
56, Close17, FIFO:  
57, Close18, FIFO:  
58, Close19, FIFO;

RESOURCES: 1, Man1, Capacity (1, ):  
2, Man2, Capacity (1, ):  
3, Man3, Capacity (1, ):  
4, Man4, Capacity (1, ):  
5, Man5, Capacity (1, ):

ก. 5 (ต่อ)

6, Man6, Capacity(1,):  
 7, Man7, Capacity(1,):  
 8, Man8, Capacity(1,):  
 9, Man9, Capacity(1,):  
 10, Man10, Capacity(1,):  
 11, Man11, Capacity(1,):  
 12, Man12, Capacity(1,):  
 13, Man13, Capacity(1,):  
 14, Man14, Capacity(1,):  
 15, Man15, Capacity(1,):  
 16, Man16, Capacity(1,):  
 17, Man17, Capacity(1,):  
 18, Man18, Capacity(1,):  
 19, Man19, Capacity(1,):

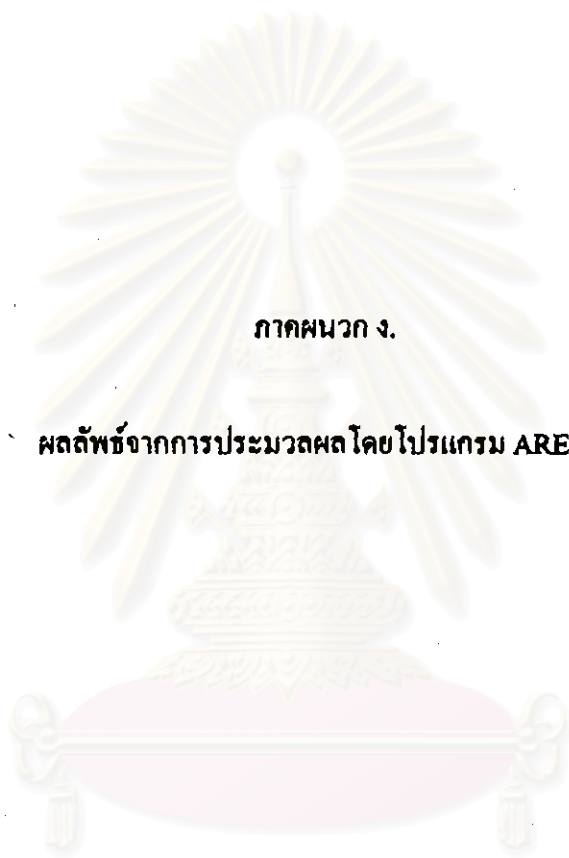
COUNTERS: 1, Cl,, Replicate;

TALLIES: Overall Flow Time;

DSTATS: 1, nq(1):  
 2, nq(2):  
 3, nq(3):  
 4, nq(4):  
 5, nq(5):  
 6, nq(6):  
 7, nq(7):  
 8, nq(8):  
 9, nq(9):  
 10, nq(10):  
 11, nq(11):  
 12, nq(12):  
 13, nq(13):  
 14, nq(14):  
 15, nq(15):  
 16, nq(16):  
 17, nq(17):  
 18, nq(18):  
 19, nq(19):  
 20, nr(1):  
 21, nr(2):  
 22, nr(3):  
 23, nr(4):  
 24, nr(5):  
 25, nr(6):  
 26, nr(7):  
 27, nr(8):  
 28, nr(9):  
 29, nr(10):  
 30, nr(11):  
 31, nr(12):  
 32, nr(13):  
 33, nr(14):  
 34, nr(15):  
 35, nr(16):  
 36, nr(17):  
 37, nr(18):  
 38, nr(19):

REPLICATE, 30, 0.0, 180, Yes, Yes, 0.0;

SETS: 1, QueueSet, Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15, Q16, Q17, Q18, Q19:  
 2, PreSet, Pre1, Pre2, Pre3, Pre4, Pre5, Pre6, Pre7, Pre8, Pre9, Pre10, Pre11, Pre12, Pre13, Pre14, Pre15,  
 3, CloseSet, Close1, Close2, Close3, Close4, Close5, Close6, Close7, Close8, Close9, Close10, Close11,  
 Close15, Close16, Close17, Close18, Close19:  
 4, ManSet, Man1, Man2, Man3, Man4, Man5, Man6, Man7, Man8, Man9, Man10, Man11, Man12, Man13, Man14, Man15,



ภาคผนวก ง.

ผลลัพธ์จากการประเมินผลโดยโปรแกรม ARENA

สถาบันวิทยบริการ  
จุฬาลงกรณ์มหาวิทยาลัย

### ง.1 ผลลัพธ์จากการประมวลผลโดยโปรแกรม ARENA (เที่ยวบิน NG 008)

#### ARENA Simulation Results

9610267 - License #9610267

#### Summary for Replication 1 of 30

Project: Check in counter      Run execution date : 11/13/1998

Analyst: Sachar Thanasriv      Model revision date: 10/30/1998

Replication ended at time : 140.0

#### TALLY VARIABLES

Identifier	Average	Variation	Minimum	Maximum	Observations
------------	---------	-----------	---------	---------	--------------

Overall Flow Time	7.9661	.48106	.85010	22.194	188
-------------------	--------	--------	--------	--------	-----

#### DISCRETE-CHANGE VARIABLES

Identifier	Average	Variation	Minimum	Maximum	Final Value
------------	---------	-----------	---------	---------	-------------

nq(1)	2.8023	.37120	.00000	5.0000	4.0000
nq(2)	2.2402	.63504	.00000	5.0000	3.0000
nq(3)	1.1835	1.2406	.00000	5.0000	.00000
nq(4)	1.0834	1.2246	.00000	5.0000	.00000
nq(5)	.85682	1.6032	.00000	4.0000	3.0000
nr(1)	.99293	.08439	.00000	1.0000	1.0000
nr(2)	.86869	.38880	.00000	1.0000	1.0000
nr(3)	.52723	.94695	.00000	1.0000	1.0000
nr(4)	.51095	.97834	.00000	1.0000	.00000
nr(5)	.30942	1.4939	.00000	1.0000	1.0000

#### COUNTERS

Identifier	Count	Limit
------------	-------	-------

CI	188	Infinite
----	-----	----------

## จ.2 ผลลัพธ์จากการประมวลผลโดยโปรแกรม ARENA (เที่ยวบิน SQ 880)

### ARENA Simulation Results

9610267 - License #9610267

#### Summary for Replication 1 of 30

Project: Check in counter                      Run execution date : 11/3/1998  
 Analyst: Sachar Thanasriv                      Model revision date: 10/2/1998  
 Replication ended at time    : 112.0

#### TALLY VARIABLES

Identifier	Average	Variation	Minimum	Maximum	Observations
------------	---------	-----------	---------	---------	--------------

Overall Flow Time	5.4816	.54934	1.0226	12.972	48
-------------------	--------	--------	--------	--------	----

#### DISCRETE-CHANGE VARIABLES

Identifier	Average	Variation	Minimum	Maximum	Final Value
------------	---------	-----------	---------	---------	-------------

nq(1)	1.1058	.86541	.00000	3.0000	.00000
nq(2)	.09948	3.5136	.00000	2.0000	.00000
nq(3)	.00000	--	.00000	.00000	.00000
nq(4)	.00000	--	.00000	.00000	.00000
nr(1)	.90668	.32083	.00000	1.0000	1.0000
nr(2)	.23932	1.7828	.00000	1.0000	.00000
nr(3)	.00000	--	.00000	.00000	.00000
nr(4)	.00000	--	.00000	.00000	.00000

#### COUNTERS

Identifier	Count	Limit
------------	-------	-------

C1	48	Infinite
----	----	----------

จ. 3 ผลลัพธ์จากการประมวลผลโดยโปรแกรม ARENA (สายการบินไทย)

ARENA Simulation Results  
9610267 - License #9610267

Summary for Replication 1 of 30

Project: Check in TG.From      Run execution date :  
11/10/1998  
Analyst: Sachar Thanasri      Model revision date: 11/  
1/1998  
Replication ended at time : 240.0

TALLY VARIABLES

Identifier	Average	Variation	Minimum	Maximum
Overall Flow Time	13.281	.40914	1.1836	31.452 1359

DISCRETE-CHANGE VARIABLES

Identifier	Average	Variation	Minimum	Maximum	Final Value
nq(1)	3.4569	.31508	.00000	6.0000	3.0000
nq(2)	3.3761	.33453	.00000	6.0000	2.0000
nq(3)	3.2903	.36304	.00000	6.0000	2.0000
nq(4)	3.2489	.37744	.00000	6.0000	2.0000
nq(5)	3.0085	.48422	.00000	6.0000	.00000
nq(6)	3.0944	.41705	.00000	6.0000	.00000
nq(7)	2.9648	.50209	.00000	6.0000	.00000
nq(8)	2.6653	.64818	.00000	6.0000	.00000
nq(9)	2.7609	.58973	.00000	6.0000	.00000
nq(10)	2.4010	.73109	.00000	6.0000	.00000
nq(11)	2.6332	.61370	.00000	6.0000	.00000
nq(12)	2.0852	.87352	.00000	5.0000	.00000
nq(13)	2.0796	.87167	.00000	5.0000	.00000
nq(14)	2.0198	.90037	.00000	5.0000	.00000
nq(15)	1.9430	.93197	.00000	5.0000	.00000
nq(16)	1.7465	1.0453	.00000	5.0000	.00000
nq(17)	1.7165	1.0685	.00000	5.0000	.00000

nq(18)	1.5104	1.2441	.00000	5.0000	.00000
nq(19)	1.4028	1.2980	.00000	5.0000	.00000
nq(20)	1.6034	1.0981	.00000	5.0000	.00000
nq(21)	1.3211	1.3852	.00000	5.0000	.00000
nq(22)	1.4314	1.2065	.00000	5.0000	.00000
nq(23)	1.2504	1.4128	.00000	5.0000	.00000
nq(24)	1.3171	1.2642	.00000	5.0000	.00000
nq(25)	1.0380	1.6093	.00000	5.0000	.00000
nq(26)	1.1976	1.3651	.00000	5.0000	.00000
nq(27)	1.0309	1.5951	.00000	5.0000	.00000
nr(1)	1.0000	.00000	.00000	1.0000	1.0000
nr(2)	.99467	.07323	.00000	1.0000	1.0000
nr(3)	.98827	.10896	.00000	1.0000	1.0000
nr(4)	.98187	.13590	.00000	1.0000	1.0000
nr(5)	.91852	.29784	.00000	1.0000	.00000
nr(6)	.97450	.16176	.00000	1.0000	1.0000
nr(7)	.92628	.28210	.00000	1.0000	.00000
nr(8)	.80493	.49229	.00000	1.0000	.00000
nr(9)	.85435	.41289	.00000	1.0000	.00000
nr(10)	.77519	.53853	.00000	1.0000	.00000
nr(11)	.85037	.41947	.00000	1.0000	.00000
nr(12)	.64131	.74787	.00000	1.0000	.00000
nr(13)	.64380	.74383	.00000	1.0000	.00000
nr(14)	.64051	.74917	.00000	1.0000	.00000
nr(15)	.60080	.81514	.00000	1.0000	.00000
nr(16)	.54321	.91702	.00000	1.0000	.00000
nr(17)	.53308	.93590	.00000	1.0000	.00000
nr(18)	.42775	1.1566	.00000	1.0000	.00000
nr(19)	.41485	1.1876	.00000	1.0000	.00000
nr(20)	.54628	.91135	.00000	1.0000	.00000
nr(21)	.38650	1.2599	.00000	1.0000	.00000
nr(22)	.47847	1.0440	.00000	1.0000	.00000
nr(23)	.37846	1.2815	.00000	1.0000	.00000
nr(24)	.45964	1.0842	.00000	1.0000	.00000
nr(25)	.31819	1.4638	.00000	1.0000	.00000
nr(26)	.42349	1.1667	.00000	1.0000	.00000
nr(27)	.33153	1.4199	.00000	1.0000	.00000

COUNTERS

Identifier	Count	Limit
C1	1359	Infinite

#### ง. 4 ผลลัพธ์จากการประมวลผลโดยโปรแกรม ARENA (ด้านตรวจหนังสือเดินทาง)

ARENA Simulation Results										
9610267 - License #9610267										
Summary for Replication 1 of 30										
Project: Passport Control	Run execution date :				nr(3)	2.7497	.32129	.00000	4.0000	.00000
11/10/1998					nr(4)	2.5367	.40603	.00000	4.0000	.00000
Analyst: Sachar Thanani	Model revision date:				nr(5)	2.0744	.62298	.00000	4.0000	.00000
10/22/1998					nr(6)	1.4566	1.0073	.00000	4.0000	.00000
Replication ended at time : 240.0					nr(7)	1.2289	1.1227	.00000	4.0000	.00000
					nr(8)	.93720	1.4032	.00000	4.0000	.00000
					nr(9)	.77458	1.5833	.00000	4.0000	.00000
					nr(10)	.48618	2.0546	.00000	4.0000	.00000
					nr(11)	.38733	2.2766	.00000	3.0000	.00000
					nr(12)	.16229	3.4455	.00000	3.0000	.00000
					nr(1)	1.0000	6.4550E-04	.00000	1.000	1.0000
					nr(2)	.99572	.06553	.00000	1.0000	1.0000
					nr(3)	.97624	.15600	.00000	1.0000	1.0000
					nr(4)	.94888	.23210	.00000	1.0000	.00000
					nr(5)	.81985	.46876	.00000	1.0000	.00000
					nr(6)	.54815	.90792	.00000	1.0000	.00000
					nr(7)	.48545	1.0295	.00000	1.0000	.00000
					nr(8)	.37399	1.2937	.00000	1.0000	.00000
					nr(9)	.30767	1.5000	.00000	1.0000	.00000
					nr(10)	.21587	1.9058	.00000	1.0000	.00000
					nr(11)	.18533	2.0966	.00000	1.0000	.00000
					nr(12)	.08881	3.2031	.00000	1.0000	.00000
<b>TALLY VARIABLES</b>										
Identifier	Average	Variation	Minimum	Maximum						
Observations										
<hr/>										
Overall Flow Time	3.3169	.38811	.38384	7.7790						
1865										
<b>DISCRETE-CHANGE VARIABLES</b>										
					<b>COUNTERS</b>					
Identifier	Average	Variation	Minimum	Maximum	Identifier	Count	Limit			
Final Value										
<hr/>										
nr(1)	3.1234	.22687	.00000	4.0000	2.0000	C1	1865	Infinite		
nr(2)	2.9347	.27298	.00000	4.0000	1.0000					

จุฬาลงกรณ์มหาวิทยาลัย



### จ.5 ผลลัพธ์จากการประมวลผลโดยโปรแกรม ARENA (ด้านตรวจคนเข้าเมือง)

ARENA Simulation Results					
9610267 - License #9610267					
Summary for Replication 1 of 30					
Project: Immigration.From					
Run execution date : 11/18/1998					
Analyst: Sachar Thanasi			Model revision date:		
11/15/1998					
Replication ended at time : 180.0					
TALLY VARIABLES					
Identifier	Average	Variation	Minimum	Maximum	
Observations					
Overall Flow Time	8.9014	.64257	.67010	27.655	
2103					
DISCRETE-CHANGE VARIABLES					
Identifier	Average	Variation	Minimum	Maximum	
Final Value					
nq(1)	6.9295	.98377	.00000	24.000	15.000
nq(2)	6.8722	.99336	.00000	24.000	15.000
nq(3)	6.9178	.99020	.00000	24.000	16.000
nq(4)	7.1444	.96490	.00000	24.000	16.000
nq(5)	6.8965	.99916	.00000	24.000	16.000
nq(6)	6.3903	1.0922	.00000	24.000	16.000
nq(7)	6.5007	1.0612	.00000	24.000	16.000
nq(8)	6.5883	1.0525	.00000	24.000	15.000
nq(9)	6.3737	1.0836	.00000	24.000	15.000
nq(10)	6.3679	1.0912	.00000	23.000	17.000
nq(11)	6.5598	1.0777	.00000	23.000	16.000
nq(12)	6.1600	1.1251	.00000	23.000	15.000
nq(13)	5.9375	1.1753	.00000	23.000	16.000
nq(14)	5.6777	1.2334	.00000	23.000	15.000
nq(15)	5.8081	1.2121	.00000	23.000	15.000
nq(16)	5.5103	1.2923	.00000	23.000	15.000
nq(17)	5.1657	1.3843	.00000	23.000	16.000
nq(18)	5.0333	1.4346	.00000	23.000	16.000
nq(19)	4.7819	1.5028	.00000	23.000	15.000
nr(1)	.80641	.48997	.00000	1.0000	1.0000
nr(2)	.79995	.50008	.00000	1.0000	1.0000
Nr(3)	.81675	.47368	.00000	1.0000	1.0000
nr(4)	.81353	.47876	.00000	1.0000	1.0000
nr(5)	.78355	.52559	.00000	1.0000	1.0000
nr(6)	.72959	.60880	.00000	1.0000	1.0000
nr(7)	.74968	.57784	.00000	1.0000	1.0000
nr(8)	.74740	.58135	.00000	1.0000	1.0000
nr(9)	.74054	.59192	.00000	1.0000	1.0000
nr(10)	.72836	.61070	.00000	1.0000	1.0000
nr(11)	.72406	.61733	.00000	1.0000	1.0000
nr(12)	.73041	.60753	.00000	1.0000	1.0000
nr(13)	.68876	.67223	.00000	1.0000	1.0000
nr(14)	.65949	.71855	.00000	1.0000	1.0000
nr(15)	.66187	.71475	.00000	1.0000	1.0000
nr(16)	.59944	.81745	.00000	1.0000	1.0000
nr(17)	.53945	.92399	.00000	1.0000	1.0000
nr(18)	.52467	.95182	.00000	1.0000	1.0000
nr(19)	.44620	1.1140	.00000	1.0000	1.0000

COUNTERS		
Identifier	Count	Limit
C1	2103	Infinite



### ประวัติผู้เขียน

นายตชา ชนศรีวิชชัย เกิดเมื่อวันที่ 23 ตุลาคม พ.ศ. 2515 ที่จังหวัดอุดรธานี สำเร็จการศึกษาปริญญาวิทยาศาสตรบัณฑิต สาขาวิศวกรรมโยธา จากคณะวิศวกรรมศาสตร์ มหาวิทยาลัยรังสิต เมื่อปี พ.ศ. 2536 ทำงานในตำแหน่งอาจารย์ประจำ ภาควิชาวิศวกรรมโยธา คณะวิศวกรรมศาสตร์ มหาวิทยาลัยรังสิต ตั้งแต่ปี พ.ศ. 2537 จนถึงปัจจุบันพักอยู่บ้านเลขที่ 6/187 ซ.พนมนครวิลล่า ถ.ลาดปลาเค้า แขวงจรเข้บัว เขตลาดพร้าว กรุงเทพมหานคร 10230



สถาบันวิทยบริการ  
จุฬาลงกรณ์มหาวิทยาลัย