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ภาคผนวก ก[1]

มาตรฐานการกำหนดตำแหน่งด้วยดาวเทียม GPS

โดยวิธีการรังวัดแบบสัมพัทธ์

ตารางที่ 1

กลุ่มที่	ชนิดของงานสำรวจ	ชั้น/ประเภทงานสำรวจ	เกณฑ์การรับงานของการรังวัดแบบสัมพัทธ์			หมายเหตุ
			ความคลาดเคลื่อน ณ ที่ทำการรังวัด	ความคลาดเคลื่อนตามระยะ		
				อัตราส่วนต่อ 1 ล้าน	อัตราส่วนทางระยะ	
			e (cm)	ppm = p	(กม.)	
1	การเคลื่อนตัวของเปลือกโลกในภูมิภาคและสากล	พิเศษเยี่ยม (AA)	0.3	0.01	1:100,000,000	-Special type
2	- โครงข่ายพื้นหลักฐานแห่งชาติ - การเคลื่อนตัวของเปลือกโลกในภูมิภาคและท้องถิ่น	ละเอียดเยี่ยม (A)	0.5	0.1	1:10,000,000	-very high **precision**
3	- โครงข่ายหมุดหลักฐานแห่งชาติ - การเคลื่อนตัวของเปลือกโลกในท้องถิ่น - งานรังวัดความละเอียดสูงทางวิศวกรรม	ละเอียดสูง (B)	0.8	1	1:1,000,000	-High precision
4	- การขยายโครงข่ายหมุดหลักฐาน	(1) ชั้นที่ 1	1.0	10	1:100,000	-Terrestrial
	- หมุดหลักฐานบังคับภาพถ่าย	(2) ชั้นที่ 2 ประเภท I	2.0	20	1:50,000	based survey
	- การรังวัดแบ่งแปลงที่ดิน	(3) ชั้นที่ 3 ประเภท II	3.0	50	1:20,000	
	- งานรังวัดทางวิศวกรรมทั่วไป	(4) ชั้นที่ 4	5.0	100	1:10,000	

หมายเหตุ คำอธิบายรายละเอียดประกอบตามตารางที่ 1 (หน้า 2)

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[1] GEOMETRIC GEODETIC ACCURACY STANDARDS AND SPECIFICATIONS FOR USING GPS RELATIVE POSITIONING TECHNIQUES.

(FEDERAL GEODETIC CONTROL COMMITTEE, May 11 1989)

คำอธิบายรายละเอียดประกอบตารางที่ 1

1 เกณฑ์รับงาน (Allowable error)

- ในการรังวัดเส้นฐานระหว่างหมุดหลักฐาน โดยมีค่าความน่าเชื่อ 95 เปอร์เซ็นต์

$$S = +- ((e)^2 + (0.1\ d.p)^2)$$

ซึ่ง S = เกณฑ์รับงานที่ค่าความน่าเชื่อสูงสุด 95 เปอร์เซ็นต์ (เซนติเมตร)

d = ระยะระหว่างหมุดหลักฐาน (กิโลเมตร)

p = ความละเอียดถูกต้องมาตรฐานทางตำแหน่งแบบสัมพัทธ์ ในอัตราส่วนต่อ 1 ล้าน (ppm = parts-per-million)

e = ความคลาดเคลื่อน ณ ที่ทำการรังวัด เช่น การตั้งเสาอากาศ (เซ็นติเมตร)

เกณฑ์มาตรฐานการรังวัดดาวเทียม ระบบ GPS

โดยวิธีการรังวัดแบบสัมพัทธ์

ตารางที่ 2

ลำดับที่	เกณฑ์การรับงานการรังวัด	ชั้นและเกณฑ์รับงานในการรังวัด						
		กลุ่มงาน	AA	A	B	C		
		ชั้นงาน	AA	A	B	1	2-I	2-II	3
		ppm	0.01	0.1	0.1	10	20	50	100
		base (cm)	0.3	0.5	0.8	1	2	3	5
1	โครงข่ายหมุดหลักฐานทางราบแห่งชาติ[1] จำนวนสถานีอย่างน้อยที่สุด								
	- รังวัดโยงยึดกับงานชั้น AA, A และ B (หมุด)		4	3	3	2			
	- รังวัดโยงยึดกับงานชั้นที่ 1 (หมุด)		"ยังไม่มีข้อกำหนด"[2]						
	- รังวัดโยงยึดกับงานชั้นที่ 2 หรือ 3 (หมุด)		"ยังไม่มีข้อกำหนด"[2]						
2	โครงข่ายหมุดหลักฐานทางดิ่งแห่งชาติ[1]								
	- รังวัดโยงหมุดระดับอย่างน้อยที่สุด[3]		5	5	5	4			
3	สถานีรังวัดสัญญาณต่อเนื่องประจำปี								
	- สถานีแม่ข่ายหรือสถานีอ้างอิง อย่างน้อยที่สุด		4	3	2	ตามความต้องการ			
4	ระยะระหว่างหมุดหลักฐาน (กม.) (ระหว่างหมุดหลักฐานเดิมกับจุดศูนย์กลางโครงการ)								
	- ระยะไม่เกินกว่า (d = ระยะไกลสุดจากจุดศูนย์กลาง (กม.)		100 d	10 d	7 d	5 d			
	- ระยะจำนวนไม่น้อยกว่า 50 เปอร์เซ็นต์ มีความยาว (กม.)		$\sqrt{5}$ d	$\sqrt{5}$ d	$\sqrt{5}$ d	d/5			
5	ตำแหน่งของหมุดหลักฐานเดิม (สัมพันธ์กับจุดศูนย์กลางโครงการ)								
	- จำนวนจตุรางคดลไม่น้อยกว่า		4	4	3	3			
6	การรังวัดโยงยึดกับหมุดหลักฐานใกล้เคียง (ทั้งในบริเวณโครงการหรือข้างเคียง)								
	- ถ้าระยะระหว่างหมุดหลักฐานห่างไม่เกิน (กม.)		30	30	10	5			

คำอธิบายรายละเอียดประกอบตารางที่ 2

(1) เกณฑ์การสำรวจทางยีออเดซีแห่งชาติ

(2) ถ้าเกณฑ์การรับงานเป็นชั้นงาน AA, A และ B และมีความประสงค์ที่จะรังวัดโยงยึดโครงข่ายเดิมให้ดีขึ้น จะต้องรังวัดโยงยึดอย่างน้อย 4 หมุด

(3) ให้เลือกการโยงยึดกับหมุดหลักฐานทางดิ่งแห่งชาติเป็นหลัก ถ้าโยงยึดกับหมุดระดับอื่น ๆ ให้บันทึกหลักฐานไว้ด้วย

กำหนดระยะห่างระหว่างหมุดคู่อะซิมุทน้อยที่สุด

ตารางที่ 3

ลำดับที่	ระยะระหว่างหมุดคู่ห่างไม่น้อยกว่า (ม.)	เกณฑ์รับงานค่าอะซิมุท (ฟิลิปดา)				
		1	2	4	6	10
		ความละเอียดของการรังวัดกำหนดตำแหน่งแบบสัมพัทธ์ (มม.)				
1	100	-	-	2	3	5
2	200	-	2	4	6	10
3	300	-	3	6	9	14
4	400	2	4	8	12	19
5	500	3	5	10	14	24
6	600	3	6	12	18	29

หมายเหตุ

1) หมุดคู่อะซิมุทสามารถมองเห็นซึ่งกันและกันได้

2) เกณฑ์รับงานของค่าอะซิมุทมีความน่าเชื่อ 95 เปอร์เซ็นต์

เกณฑ์มาตรฐานการสำรวจด้วยดาวเทียม GPS

โดยวิธีการรังวัดแบบสัมพัทธ์

ตารางที่ 4

ลำดับที่	วิธีการรังวัดกำหนดตำแหน่งแบบสัมพัทธ์	ชั้นและเกณฑ์รับงานในการรังวัด				
		กลุ่มงาน	AA	A	B	C
		ชั้นงาน	AA	A	B	1 , 2-I & II , 3
		ppm	0.01	0.1	0.1	10 , 20 , 50 , 100
1	การรังวัดด้วยสองช่วงคลื่น (L1/L2)					
	- การรังวัดในเวลากลางวัน		"มีความจำเป็น"			ตามความต้องการ
2	เครื่องมือที่รังวัดดาวเทียมพร้อมกัน					
	- จำนวนไม่น้อยกว่า		5	5	4	3
3	การรังวัดสัญญาณดาวเทียม					
	- ห้วงระยะเวลาในการรังวัดพร้อมกัน จำนวนดาวเทียม 4 ดวง หรือมากกว่า สำหรับการคำนวณแบบต่าง ๆ (นาที)					
	(1) การคำนวณแบบ TRIPLE		ไม่มีกำหนด		240	60-120
	(2) การคำนวณแบบอื่น ๆ ที่ใช้การรังวัดแบบสัมพัทธ์ เช่น SINGLE, DOUBLE		240	240	120	30-60
	(3) การรังวัดต่อเนื่องด้วยเครื่องมือทุกเครื่องพร้อมกัน		180	120	60	20-30
	(4) อัตราความเร็วสูงสุดในการรับสัญญาณข้อมูลดาวเทียม (วินาที)		15	30	30	15-30
	(5) จำนวนจตุรางคดลของดาวเทียมที่รับสัญญาณ		4	4	3	3 หรือ 2
	(6) มุมสูงของดาวเทียมจากขอบฟ้า (องศา)		10	15	20	20-40

ตารางที่ 4 (ต่อ)

ลำดับที่	วิธีการรังวัดกำหนดตำแหน่งแบบสัมพัทธ์	ชั้นและเกณฑ์รับงานในการรังวัด				
		กลุ่มงาน	AA	A	B	C
		ชั้นงาน	AA	A	B	1 , 2-I & II , 3
		ppm	0.01	0.1	0.1	10 , 20 , 50 , 100
4	จำนวนสถานีที่ทำการรังวัดอิสระ					
	(1) จำนวน 3 สถานี หรือมากกว่า (เป็นเปอร์เซนต์จากสถานีทั้งหมดไม่น้อยกว่า)		80	40	20	10
	(2) จำนวน 2 สถานี หรือมากกว่า (เป็นเปอร์เซ็นต์จากสถานีต่าง ๆ ไม่น้อยกว่า)					
	- สถานีใหม่		100	80	50	30
	- สถานีหมุดหลักฐานทางดิ่ง		100	100	100	100
	- สถานีหมุดหลักฐานทางราบ		100	75	50	25
	(3) จำนวน 2 สถานี					
	- ของแต่ละสถานีของหมุดคู่อะซิมุท			"จำเป็น"		จำเป็น
5	สถานีแม่ข่ายรังวัดดาวโคจรดาวเทียม					
	- จำนวนสถานีอย่างน้อย (ถ้าต้องการ)		4	3	2	ตามความต้องการ
6	การรังวัดซ้ำระยะเส้นฐาน					
	- ในแนวเหนือ-ใต้ และ ออก-ตก ประมาณเท่า ๆ กัน					
	- เปอร์เซนต์ของสถานีวัดซ้ำจากจำนวนสถานีรังวัดอิสระทั้งหมดไม่น้อยกว่า		25	15	5	5

ตารางที่ 4 (ต่อ)

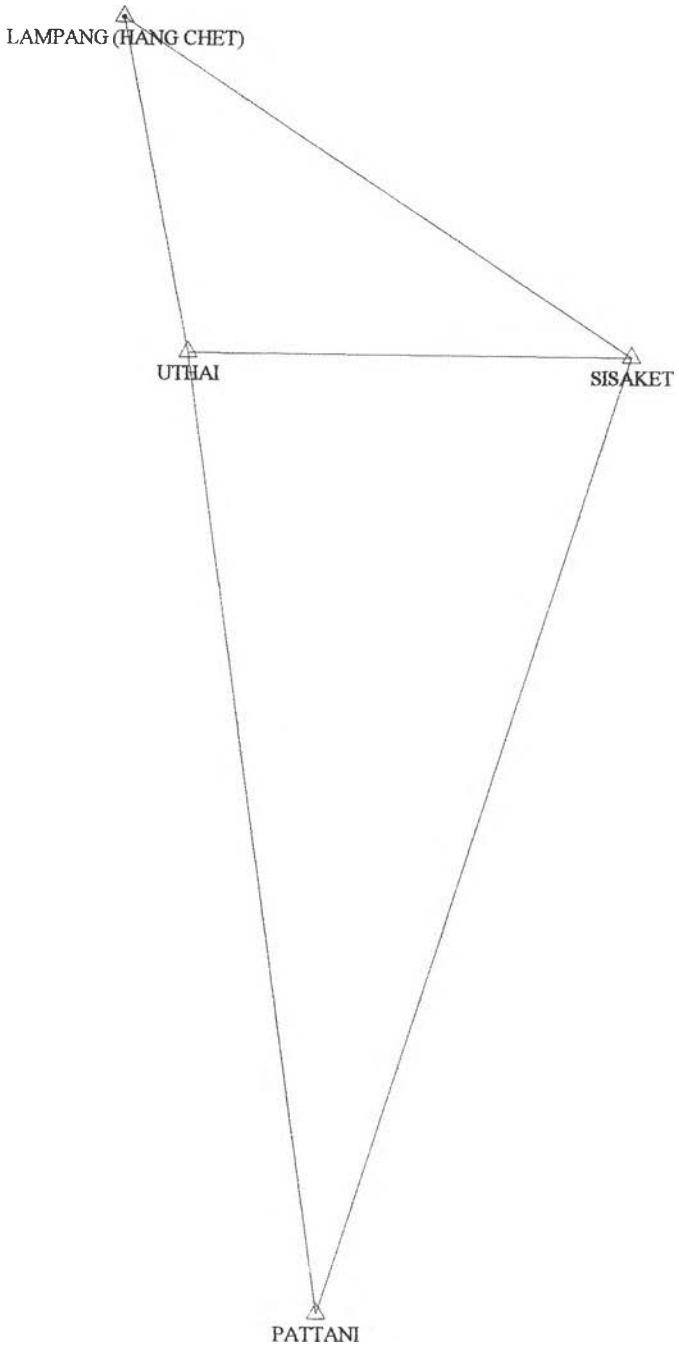
ลำดับที่	วิธีการรังวัดกำหนดตำแหน่งแบบสัมพัทธ์	ชั้นและเกณฑ์รับงานในการรังวัด				
		กลุ่มงาน	AA	A	B	C
		ชั้นงาน	AA	A	B	1 , 2-I & II , 3
		ppm	0.01	0.1	0.1	10 , 20 , 50 , 100
7	ความคาดเคลื่อนบรรจบวง (การกำหนดวงเพื่อการวิเคราะห์ข้อมูลภายหลังการรังวัด)					
	(1) ระยะเส้นฐานที่ได้จากการรังวัดอิสระของห้วงเวลาต่าง ๆ ไม่น้อยกว่า		3	3	2	2
	(2) ผลรวมของระยะเส้นฐานแต่ละวงบรรจบต้องไม่น้อยกว่า		6	8	10	10
	(3) ผลรวมของความยาวระยะเส้นฐานของแต่ละวงบรรจบปกติต้องยาวไม่เกิน (กม.)		2,000	300	100	100
	(4) ระยะเส้นฐานที่ใช้ไม่ได้ในวงบรรจบใด ๆ ต้องไม่เกิน (เปอร์เซ็นต์)		0	5	20	30
	(5) สถานีรังวัดของวงบรรจบใด ๆ จากสถานีทั้งหมดที่ใช้ไม่ได้ ต้องไม่เกิน (เปอร์เซ็นต์)		0	5	10	15
8	การรังวัดโยงยึดโดยตรงกับสถานีข้างเคียง					
	- มีระยะห่างไม่ไกลเกินกว่า (กม.)		30	10	5	3
9	การตั้งเสาอากาศ					
	- จำนวนครั้งในการรังวัดจุดศูนย์กลางเสาอากาศของแต่ละห้วงเวลาในการรังวัด ไม่น้อยกว่า		3	3	2	2
10	การรังวัดสภาพอากาศ (อุณภูมิ, ความกด, ความชื้นสัมพัทธ์)					
	(1) จำนวนครั้งในแต่ละห้วงเวลาไม่น้อยกว่า		3	3	2	2
	(2) ระยะเวลาในการวัดสภาพอากาศ ต้องไม่นานเกินกว่า (นาที)		30	30	60	60

ภาคผนวก ข

ภาคผนวก ข-1

ผลการปรับแก้ แบบ free adjustment โครงข่าย NIMA

Network Map: NIMA_LongBaseLines



200000m

Project:	NIMA_LongBaseLines
Supervisor:	Dr.Chugiat Wichiencharoen
Date Created:	10/7/00 1:52
Date Last Accessed:	3/11/00 22:52
Project Directory:	C:\GPSURVEY\projects\NIMA_Lon
Antenna Type:	Ashtech Geodetic L1/L2 L
Antenna Measurement Method:	True Vertical
Antenna Group:	RINEX
Receiver Type:	Ashtech L2
Coordinate System:	Geographic
Zone:	WGS84
Linear Unit:	Meter
Timezone:	THAILAND : 7:00
Number of Stations:	8
Number of Baselines:	45
No. of Continuous Kinematic Solns:	0

***** End of Report *****

**** SSF/SSK Solution Output Files For Selected Baselines ****

.ssf/.ssk Solution Output File	From Station Short Name	To Station Short Name	Solution Type	Slope	Ratio	Reference Variance
00002586.ssf	LAMPANG (HAN	SISAKET	Iono free fixed	607281.646	5.7	3.675
00002574.ssf	LAMPANG (HAN	SISAKET	Iono free fixed	607281.660	3.0	2.106
00002570.ssf	LAMPANG (HAN	SISAKET	Iono free fixed	607281.600	1.6	4.465
00002566.ssf	LAMPANG (HAN	SISAKET	Iono free float	607281.641		1.170
00002562.ssf	LAMPANG (HAN	SISAKET	Iono free fixed	607281.653	3.4	6.512
00002558.ssf	LAMPANG (HAN	SISAKET	Iono free float	607281.608		6.037
00002614.ssf	LAMPANG (HAN	UTHAI	Iono free float	333701.644		1.824
00002626.ssf	LAMPANG (HAN	UTHAI	Iono free float	333701.641		1.537
00002638.ssf	LAMPANG (HAN	UTHAI	Iono free float	333701.627		3.466
00002658.ssf	PATTANI	SISAKET	Iono free float	987342.841		3.927
00002682.ssf	PATTANI	SISAKET	Iono free float	987342.890		3.849
00002694.ssf	PATTANI	SISAKET	Iono free float	987342.954		5.708
00002714.ssf	PATTANI	SISAKET	Iono free float	987343.003		1.912
00002650.ssf	PATTANI	UTHAI	Iono free float	948274.957		3.943
00002670.ssf	PATTANI	UTHAI	Iono free float	948274.938		17.178
00002674.ssf	PATTANI	UTHAI	Iono free fixed	948274.981	2.4	5.399
00002706.ssf	PATTANI	UTHAI	Iono free float	948274.971		3.037
00002554.ssf	SISAKET	LAMPANG (HAN	Iono free fixed	607281.590	3.4	4.522
00002578.ssf	SISAKET	LAMPANG (HAN	Iono free fixed	607281.640	15.2	3.239
00002582.ssf	SISAKET	LAMPANG (HAN	Iono free float	607281.622		5.137
00002654.ssf	SISAKET	PATTANI	Iono free float	987342.936		3.599
00002662.ssf	SISAKET	PATTANI	Iono free float	987342.977		2.310
00002690.ssf	SISAKET	PATTANI	Iono free float	987342.990		2.681
00002698.ssf	SISAKET	PATTANI	Iono free float	987342.983		3.919
00002718.ssf	SISAKET	PATTANI	Iono free float	987342.967		5.243
00002590.ssf	SISAKET	UTHAI	Iono free float	444687.817		5.852
00002598.ssf	SISAKET	UTHAI	Iono free float	444687.757		2.185
00002606.ssf	SISAKET	UTHAI	Iono free fixed	444687.801	1.9	2.879
00002610.ssf	SISAKET	UTHAI	Iono free float	444687.826		2.335
00002722.ssf	SISAKET	UTHAI	Iono free fixed	444687.829	15.5	2.417
00002618.ssf	UTHAI	LAMPANG (HAN	Iono free float	333701.626		2.305
00002622.ssf	UTHAI	LAMPANG (HAN	Iono free float	333701.627		2.984
00002630.ssf	UTHAI	LAMPANG (HAN	Iono free fixed	333701.609	44.0	4.983
00002634.ssf	UTHAI	LAMPANG (HAN	Iono free float	333701.632		2.405
00002642.ssf	UTHAI	LAMPANG (HAN	Iono free float	333701.613		2.524
00002646.ssf	UTHAI	LAMPANG (HAN	Iono free fixed	333701.628	1.5	5.865
00002666.ssf	UTHAI	PATTANI	Iono free float	948274.973		3.744
00002678.ssf	UTHAI	PATTANI	Iono free fixed	948274.938	10.0	5.909
00002686.ssf	UTHAI	PATTANI	Iono free float	948274.982		3.122
00002702.ssf	UTHAI	PATTANI	Iono free float	948274.968		3.985
00002710.ssf	UTHAI	PATTANI	Iono free float	948274.932		6.443
00002594.ssf	UTHAI	SISAKET	Iono free float	444687.825		4.276
00002602.ssf	UTHAI	SISAKET	Iono free float	444687.755		1.840
00002726.ssf	UTHAI	SISAKET	Iono free fixed	444687.814	15.2	2.451
00002730.ssf	UTHAI	SISAKET	Iono free fixed	444687.809	3.8	2.587

***** End of Report *****

Redundant Vectors of Nima LongBaseLine

From	To	Solution	File	Delta X	Delta Y	Delta Z
3001	3146	10	00002590.WAV	+0.0000	+0.0000	+0.0000
		11	00002594.WAV	+0.0141	-0.0267	-0.0220
		12	00002598.WAV	-0.0402	-0.0947	-0.0278
		13	00002602.WAV	-0.0419	-0.0976	-0.0283
		14	00002606.WAV	+0.0287	-0.2070	-0.0523
		15	00002610.WAV	+0.0398	-0.1392	-0.0497
		43	00002722.WAV	+0.0190	-0.0298	-0.0009
		44	00002726.WAV	+0.0066	-0.0450	-0.0281
		45	00002730.WAV	+0.0053	-0.0606	-0.0165
3001	3217	16	00002614.WAV	+0.0000	+0.0000	+0.0000
		17	00002618.WAV	+0.0014	-0.0366	+0.0088
		18	00002622.WAV	-0.0122	-0.0394	+0.0112
		19	00002626.WAV	-0.0013	+0.0104	+0.0065
		20	00002630.WAV	+0.0459	+0.0057	+0.0267
		21	00002634.WAV	-0.0095	+0.0170	+0.0195
		22	00002638.WAV	+0.0107	+0.0825	+0.0366
		23	00002642.WAV	-0.0056	+0.0118	+0.0378
		24	00002646.WAV	+0.0055	+0.0594	+0.0310
3001	3405	25	00002650.WAV	+0.0000	+0.0000	+0.0000
		29	00002666.WAV	-0.0334	+0.1091	+0.0406
		30	00002670.WAV	+0.1202	+0.0731	-0.0289
		31	00002674.WAV	-0.0468	-0.0302	+0.0287
		32	00002678.WAV	-0.0149	-0.0476	-0.0247
		34	00002686.WAV	+0.0064	-0.0380	+0.0185
		38	00002702.WAV	-0.0124	-0.0500	+0.0060
		39	00002706.WAV	-0.0768	-0.0710	+0.0168
		40	00002710.WAV	+0.1724	-0.0580	-0.0662
3146	3217	1	00002554.WAV	+0.0000	+0.0000	+0.0000
		2	00002558.WAV	-0.0168	-0.0365	-0.0064
		3	00002562.WAV	-0.0573	+0.0537	-0.0289
		4	00002566.WAV	-0.0608	+0.0541	+0.0000
		5	00002570.WAV	-0.0121	+0.0303	-0.0011
		6	00002574.WAV	-0.0793	+0.0905	-0.0077
		7	00002578.WAV	-0.0710	+0.2096	+0.0134
		8	00002582.WAV	-0.0591	+0.1391	+0.0299
		9	00002586.WAV	-0.0859	+0.2307	+0.0258
3146	3405	26	00002654.WAV	+0.0000	+0.0000	+0.0000
		27	00002658.WAV	+0.1834	+0.1366	-0.0115
		28	00002662.WAV	+0.0303	+0.0835	+0.0760
		33	00002682.WAV	+0.1693	+0.0310	+0.0091
		35	00002690.WAV	+0.0321	-0.0011	+0.0671
		36	00002694.WAV	+0.1403	-0.0437	+0.0495
		37	00002698.WAV	+0.0231	-0.0304	+0.0491
		41	00002714.WAV	+0.0278	+0.0572	+0.0964
		42	00002718.WAV	+0.1214	-0.0163	+0.0649

Global Network Closure of NIMA LongBaseLine

COORDINATE COMPUTATION SEQUENCE

Begin computations at point 3001
From 3001 using SOL# 10 VEC# 1 compute 3146
From 3146 using SOL# 1 VEC# 1 compute 3217
From 3146 using SOL# 26 VEC# 1 compute 3405

CLOSURES

SOL#	V#	FROM	TO	DELTA X	DELTA Y	DELTA Z
1	1	3217	3146	0.000	0.000	0.000
2	1	3146	3217	0.017	0.037	0.006
3	1	3146	3217	0.057	-0.054	0.029
4	1	3146	3217	0.061	-0.054	0.000
5	1	3146	3217	0.012	-0.030	0.001
6	1	3146	3217	0.079	-0.091	0.008
7	1	3217	3146	-0.071	0.210	0.013
8	1	3217	3146	-0.059	0.139	0.030
9	1	3146	3217	0.086	-0.231	-0.026
10	1	3001	3146	0.000	0.000	0.000
11	1	3146	3001	0.014	-0.027	-0.022
12	1	3001	3146	0.040	0.095	0.028
13	1	3146	3001	-0.042	-0.098	-0.028
14	1	3001	3146	-0.029	0.207	0.052
15	1	3001	3146	-0.040	0.139	0.050
16	1	3001	3217	0.050	-0.006	0.027
17	1	3217	3001	-0.049	-0.031	-0.018
18	1	3217	3001	-0.063	-0.033	-0.016
19	1	3001	3217	0.052	-0.016	0.021
20	1	3217	3001	-0.005	0.012	0.000
21	1	3217	3001	-0.060	0.023	-0.008
22	1	3001	3217	0.040	-0.088	-0.009
23	1	3217	3001	-0.056	0.018	0.011

24	1	3217	3001	-0.045	0.065	0.004
25	1	3001	3405	-0.060	0.045	-0.004
26	1	3405	3146	0.000	0.000	0.000
27	1	3146	3405	-0.183	-0.137	0.011
28	1	3405	3146	0.030	0.083	0.076
29	1	3405	3001	0.026	0.064	0.045
30	1	3001	3405	-0.180	-0.028	0.025
31	1	3001	3405	-0.013	0.075	-0.033
32	1	3405	3001	0.045	-0.092	-0.020
33	1	3146	3405	-0.169	-0.031	-0.009
34	1	3405	3001	0.066	-0.083	0.023
35	1	3405	3146	0.032	-0.001	0.067
36	1	3146	3405	-0.140	0.044	-0.050
37	1	3405	3146	0.023	-0.030	0.049
38	1	3405	3001	0.047	-0.095	0.010
39	1	3001	3405	0.017	0.116	-0.021
40	1	3405	3001	0.232	-0.103	-0.062
41	1	3146	3405	-0.028	-0.057	-0.096
42	1	3405	3146	0.121	-0.016	0.065
43	1	3001	3146	-0.019	0.030	0.001
44	1	3146	3001	0.007	-0.045	-0.028
45	1	3146	3001	0.005	-0.061	-0.017

COORDINATE ADJUSTMENT SUMMARY
NETWORK = NIMA_LongBa
TIME = Sun Jul 9 12:55:02 2000

Datum = WGS-84
Coordinate System = Geographic
Zone = Global

Network Adjustment Constraints:
Inner constraints in y
Inner constraints in x
Inner constraints in H

POINT	NAME	OLD COORDS	ADJUST	NEW COORDS	1.96σ
1	3001				
	LAT=	15° 23' 01.539409"	-0.000002"	15° 23' 01.539408"	0.002406m
	LON=	100° 00' 47.513185"	-0.000001"	100° 00' 47.513183"	0.004785m
	ELL HT=	107.9928m	-0.0003m	107.9925m	0.006264m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
2	3146				
	LAT=	15° 21' 00.899088"	-0.000001"	15° 21' 00.899087"	0.003284m
	LON=	104° 09' 20.615187"	-0.000003"	104° 09' 20.615185"	0.005842m
	ELL HT=	100.9032m	-0.0013m	100.9019m	0.008737m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
3	3217				
	LAT=	18° 20' 07.228295"	+0.000022"	18° 20' 07.228317"	0.003200m
	LON=	99° 22' 16.328279"	-0.000055"	99° 22' 16.328224"	0.006354m
	ELL HT=	240.4525m	-0.0003m	240.4522m	0.008357m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
4	3405				
	LAT=	6° 53' 22.918609"	-0.000020"	6° 53' 22.918589"	0.004720m
	LON=	101° 14' 40.799042"	+0.000059"	101° 14' 40.799100"	0.012109m
	ELL HT=	-10.1324m	+0.0019m	-10.1305m	0.012709m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN

ADJUSTMENT STATISTICS SUMMARY
NETWORK = NIMA_LongBa
TIME = Sun Jul 9 12:55:02 2000

ADJUSTMENT SUMMARY

Network Reference Factor = 1.00
Chi-Square Test (95%) = PASS
Degrees of Freedom = 126.00

GPS OBSERVATIONS
Reference Factor = 1.00
r = 126.00

GPS Solution	1	Reference Factor =	1.02	r =	2.97
GPS Solution	2	Reference Factor =	1.00	r =	2.96
GPS Solution	3	Reference Factor =	0.97	r =	2.92
GPS Solution	4	Reference Factor =	0.92	r =	2.23
GPS Solution	5	Reference Factor =	1.03	r =	2.93
GPS Solution	6	Reference Factor =	0.94	r =	2.85
GPS Solution	7	Reference Factor =	1.00	r =	2.98
GPS Solution	8	Reference Factor =	1.02	r =	2.94
GPS Solution	9	Reference Factor =	1.01	r =	2.97
GPS Solution	10	Reference Factor =	0.99	r =	2.95
GPS Solution	11	Reference Factor =	0.99	r =	2.87
GPS Solution	12	Reference Factor =	1.02	r =	2.77
GPS Solution	13	Reference Factor =	1.02	r =	2.77
GPS Solution	14	Reference Factor =	1.01	r =	2.98
GPS Solution	15	Reference Factor =	1.01	r =	2.97
GPS Solution	16	Reference Factor =	0.88	r =	2.61
GPS Solution	17	Reference Factor =	1.03	r =	2.95
GPS Solution	18	Reference Factor =	1.00	r =	2.96
GPS Solution	19	Reference Factor =	0.73	r =	1.56
GPS Solution	20	Reference Factor =	1.04	r =	2.97
GPS Solution	21	Reference Factor =	1.04	r =	2.67
GPS Solution	22	Reference Factor =	1.01	r =	2.98
GPS Solution	23	Reference Factor =	1.03	r =	2.96
GPS Solution	24	Reference Factor =	1.03	r =	2.90
GPS Solution	25	Reference Factor =	1.03	r =	2.75
GPS Solution	26	Reference Factor =	1.01	r =	2.94
GPS Solution	27	Reference Factor =	1.02	r =	2.99
GPS Solution	28	Reference Factor =	1.01	r =	2.97
GPS Solution	29	Reference Factor =	1.01	r =	2.97
GPS Solution	30	Reference Factor =	1.01	r =	2.99
GPS Solution	31	Reference Factor =	1.02	r =	2.85
GPS Solution	32	Reference Factor =	1.01	r =	2.89
GPS Solution	33	Reference Factor =	1.02	r =	2.87
GPS Solution	34	Reference Factor =	0.89	r =	1.64
GPS Solution	35	Reference Factor =	1.00	r =	2.92
GPS Solution	36	Reference Factor =	0.98	r =	2.94
GPS Solution	37	Reference Factor =	1.00	r =	2.71
GPS Solution	38	Reference Factor =	0.99	r =	2.61
GPS Solution	39	Reference Factor =	0.97	r =	2.89
GPS Solution	40	Reference Factor =	1.00	r =	2.99
GPS Solution	41	Reference Factor =	1.00	r =	2.97
GPS Solution	42	Reference Factor =	0.99	r =	2.93

GPS Solution 43 Reference Factor = 1.00 r = 2.93
GPS Solution 44 Reference Factor = 0.98 r = 2.71
GPS Solution 45 Reference Factor = 0.97 r = 1.95

WEIGHTING STRATEGIES:

GPS OBSERVATIONS:
Scalar Weighting Strategy:
Alternative Scalar Set Applied to Individual GPS Solutions:
Solution 1 = 42.98
Solution 2 = 32.50
Solution 3 = 21.41
Solution 4 = 7.11
Solution 5 = 29.14
Solution 6 = 26.58
Solution 7 = 52.99
Solution 8 = 15.25
Solution 9 = 48.77
Solution 10 = 12.45
Solution 11 = 15.98
Solution 12 = 9.75
Solution 13 = 10.94
Solution 14 = 47.39
Solution 15 = 24.34
Solution 16 = 6.31
Solution 17 = 17.96
Solution 18 = 16.17
Solution 19 = 2.86
Solution 20 = 35.42
Solution 21 = 6.46
Solution 22 = 25.03
Solution 23 = 20.34
Solution 24 = 18.91
Solution 25 = 10.37
Solution 26 = 23.90
Solution 27 = 52.39
Solution 28 = 40.99
Solution 29 = 29.27
Solution 30 = 21.29
Solution 31 = 25.45
Solution 32 = 32.09
Solution 33 = 16.70
Solution 34 = 4.57
Solution 35 = 22.69
Solution 36 = 19.01
Solution 37 = 10.46
Solution 38 = 8.30
Solution 39 = 18.32
Solution 40 = 37.82
Solution 41 = 43.94
Solution 42 = 17.72
Solution 43 = 22.77
Solution 44 = 11.13
Solution 45 = 5.55

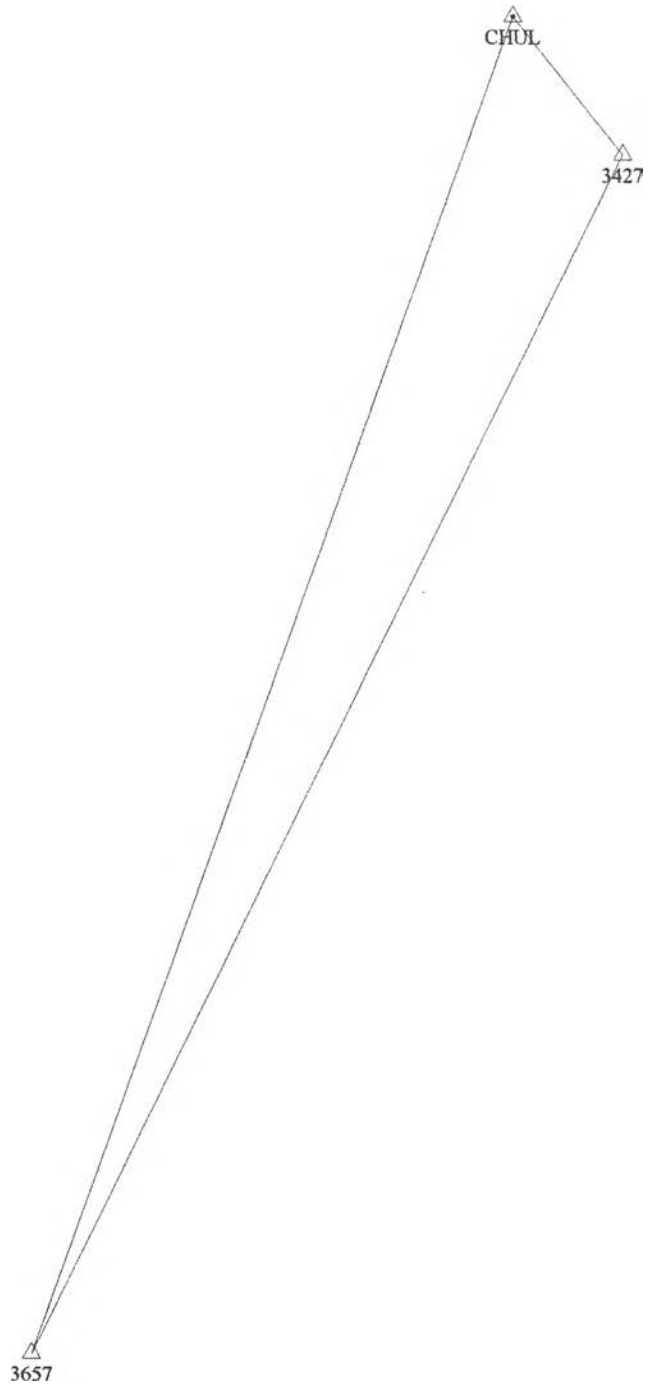
No summation weighting strategy was used

Station Error Strategy:
H.I. error = 0.0030
Tribrach error = 0.0015

ภาคผนวก ข-2

ผลการปรับแก้ แบบ free adjustment โครงข่าย GEODYSSEA98

Network Map: Geodys98



100000m

Project:	Geodys98
Supervisor:	Dr.Chugiat Wichiencharoen
Date Created:	9/7/00 23:14
Date Last Accessed:	7/8/00 5:31
Project Directory:	C:\GPSURVEY\projects\Geodys98
Antenna Type:	4000SST/SSE L1/L2 Geodetic
Antenna Measurement Method:	True Vertical
Antenna Group:	RINEX
Receiver Type:	4000SSE
Coordinate System:	Geographic
Zone:	WGS84
Linear Unit:	Meter
Timezone:	THAILAND : 7:00
Number of Stations:	3
Number of Baselines:	9
No. of Continuous Kinematic Solns:	0

***** End of Report *****

**** SSF/SSK Solution Output Files For Selected Baselines ****

.ssf/.ssk Solution Output File	From Station Short Name	To Station Short Name	Solution Type	Slope	Ratio	Reference Variance
00002413.ssf	3427	CHUL	Iono free float	87792.433		4.433
00002411.ssf	3427	CHUL	Iono free float	87792.421		2.422
00002409.ssf	3427	CHUL	Iono free float	87792.419		3.373
00002406.ssf	3657	3427	Iono free float	664300.829		2.101
00002401.ssf	3657	3427	Iono free float	664300.827		2.182
00002419.ssf	3657	3427	Iono free float	664300.804		1.631
00002404.ssf	3657	CHUL	Iono free float	704179.337		1.795
00002415.ssf	3657	CHUL	Iono free float	704179.342		2.150
00002417.ssf	3657	CHUL	Iono free float	704179.324		2.515

***** End of Report *****

Redundant Vectors of Geodys98

From	To	Solution	File	Delta X	Delta Y	Delta Z
3427	3657	1	00002401.WAV	+0.0000	+0.0000	+0.0000
		3	00002406.WAV	-0.0111	+0.0096	-0.0005
		9	00002419.WAV	+0.0358	-0.0061	-0.0112
3427	CHUL	4	00002409.WAV	+0.0000	+0.0000	+0.0000
		5	00002411.WAV	-0.0161	+0.0257	+0.0137
		6	00002413.WAV	-0.0273	+0.0111	+0.0060
3657	CHUL	2	00002404.WAV	+0.0000	+0.0000	+0.0000
		7	00002415.WAV	-0.0044	-0.0053	-0.0085
		8	00002417.WAV	-0.0582	+0.0324	+0.0025

Global Network Closure of Geodys98

COORDINATE COMPUTATION SEQUENCE

Begin computations at point 3427
From 3427 using SOL# 1 VEC# 1 compute 3657
From 3657 using SOL# 2 VEC# 1 compute CHUL

CLOSURES

SOL#	V#	FROM	TO	DELTA X	DELTA Y	DELTA Z
1	1	3427	3657	0.000	0.000	0.000
2	1	CHUL	3657	0.000	0.000	0.000
3	1	3427	3657	0.011	-0.010	0.000
4	1	CHUL	3427	-0.026	0.004	-0.024
5	1	CHUL	3427	-0.042	0.029	-0.011
6	1	CHUL	3427	-0.053	0.015	-0.018
7	1	CHUL	3657	-0.004	-0.005	-0.009
8	1	CHUL	3657	-0.058	0.032	0.003
9	1	3427	3657	-0.036	0.006	0.011

COORDINATE ADJUSTMENT SUMMARY
NETWORK = Geodys98
TIME = Sun Jul 9 10:41:30 2000

Datum = WGS-84
Coordinate System = Geographic
Zone = Global

Network Adjustment Constraints:
Inner constraints in y
Inner constraints in x
Inner constraints in H

POINT	NAME	OLD COORDS	ADJUST	NEW COORDS	1.96σ
1	3427				
	LAT=	13° 07' 13.910089"	+0.000008"	13° 07' 13.910097"	0.001725m
	LON=	101° 02' 40.954626"	+0.000024"	101° 02' 40.954650"	0.003929m
	ELL HT=	51.5216m	+0.0015m	51.5232m	0.006928m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
2	3657				
	LAT=	7° 45' 32.648285"	-0.000007"	7° 45' 32.648278"	0.002577m
	LON=	98° 18' 12.942855"	-0.000018"	98° 18' 12.942837"	0.006454m
	ELL HT=	-1.7474m	+0.0002m	-1.7472m	0.009731m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
3	CHUL				
	LAT=	13° 44' 07.612254"	-0.000001"	13° 44' 07.612253"	0.002309m
	LON=	100° 31' 56.257795"	-0.000006"	100° 31' 56.257789"	0.005222m
	ELL HT=	-13.9634m	-0.0018m	-13.9652m	0.010254m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN

ADJUSTMENT STATISTICS SUMMARY
NETWORK = Geodys98
TIME = Sun Jul 9 10:41:30 2000

ADJUSTMENT SUMMARY

Network Reference Factor = 0.98
Chi-Square Test (95%) = PASS
Degrees of Freedom = 21.00

GPS OBSERVATIONS
Reference Factor = 0.98
r = 21.00

GPS Solution	1	Reference Factor =	0.94	r =	2.28
GPS Solution	2	Reference Factor =	1.01	r =	2.91
GPS Solution	3	Reference Factor =	0.74	r =	1.16
GPS Solution	4	Reference Factor =	1.08	r =	2.69
GPS Solution	5	Reference Factor =	0.66	r =	0.96
GPS Solution	6	Reference Factor =	0.98	r =	2.60
GPS Solution	7	Reference Factor =	1.01	r =	2.82
GPS Solution	8	Reference Factor =	0.99	r =	2.70
GPS Solution	9	Reference Factor =	1.03	r =	2.88

WEIGHTING STRATEGIES:

GPS OBSERVATIONS:
Scalar Weighting Strategy:
Alternative Scalar Set Applied to Individual GPS Solutions:
Solution 1 = 3.71
Solution 2 = 11.28
Solution 3 = 1.82
Solution 4 = 7.15
Solution 5 = 2.18
Solution 6 = 5.18
Solution 7 = 8.81
Solution 8 = 6.96
Solution 9 = 11.17

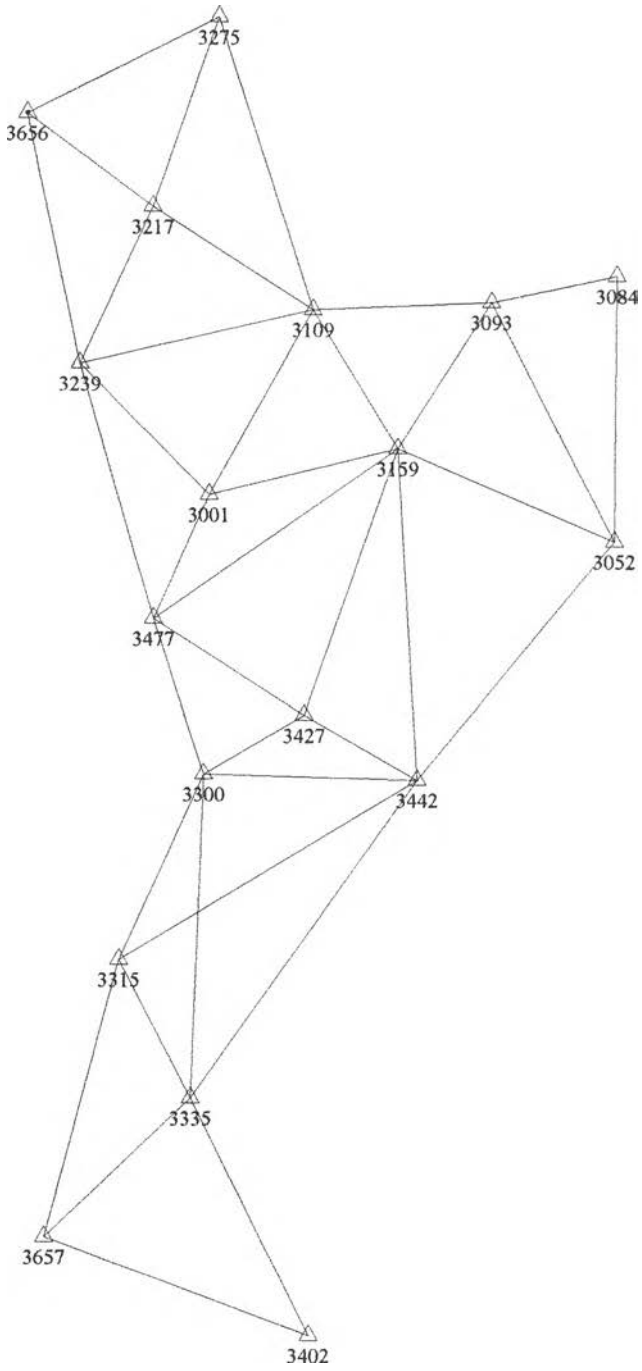
No summation weighting strategy was used

Station Error Strategy:
H.I. error = 0.0030
Tribrach error = 0.0015

ภาคผนวก ข-3

ผลการปรับแก้ แบบ free adjustment โครงข่ายขยายจุดควบคุม

Network Map: RTSD1999



200000m

Project:	RTSD1999
Supervisor:	Dr.Chugiat Wichiencharoen
Date Created:	10/7/00 7:39
Date Last Accessed:	26/11/00 11:38
Project Directory:	C:\GPSURVEY\projects\RTSD1999
Antenna Type:	Compact L1/L2 w/Ground Plane
Antenna Measurement Method:	Measured to bottom of notch on ground plane
Antenna Group:	GPSurvey
Receiver Type:	4000SSE
Coordinate System:	Geographic
Zone:	WGS84
Linear Unit:	Meter
Timezone:	THAILAND : 7:00
Number of Stations:	18
Number of Baselines:	48
No. of Continuous Kinematic Solns:	0

**** SSF/SSK Solution Output Files For Selected Baselines ****

ssf/.ssk Solution Output File	From Station Short Name	To Station Short Name	Solution Type	Slope	Ratio	Reference Variance
00002758.ssf	3001	3109	Iono free float	242217.239		1.316
00002767.ssf	3001	3159	Iono free float	226293.058		6.042
00002761.ssf	3001	3239	Iono free float	212515.755		1.866
00002863.ssf	3001	3477	Iono free float	155683.460		3.401
00002872.ssf	3052	3084	Iono free float	302305.714		2.271
00002803.ssf	3052	3093	Iono free float	305958.969		2.681
00002821.ssf	3052	3159	Iono free float	273289.465		3.843
00002824.ssf	3052	3159	Iono free float	273289.496		8.619
00002812.ssf	3052	3442	Iono free float	356998.348		5.480
00002818.ssf	3052	3442	Iono free float	356998.329		7.439
00002809.ssf	3093	3084	Iono free float	149382.211		1.866
00002869.ssf	3093	3084	Iono free float	149382.205		1.616
00002875.ssf	3109	3093	Iono free float	208474.228		3.253
00002764.ssf	3109	3159	Iono free float	185991.418		2.216
00002800.ssf	3109	3275	Iono free float	349748.280		1.397
00002866.ssf	3159	3093	Iono free float	200017.426		2.647
00002806.ssf	3159	3109	Iono free float	185991.428		2.580
00002815.ssf	3159	3442	Iono free float	376344.905		5.139
00002791.ssf	3217	3109	Iono free float	221415.116		1.756
00002779.ssf	3217	3239	Iono free float	197047.923		2.578
00002794.ssf	3217	3275	Iono free float	227450.422		1.753
00002788.ssf	3217	3656	Iono free float	181999.172		1.328
00002776.ssf	3239	3109	Iono free float	279260.882		1.744
00002797.ssf	3239	3109	Iono free float	279260.883		2.856
00002755.ssf	3300	3442	Iono free float	248511.514		5.500
00002833.ssf	3300	3442	Iono free float	248511.515		5.746
00002737.ssf	3300	3477	Iono free float	185463.771		5.261
00002827.ssf	3315	3300	Iono free float	232635.237		4.632
00002845.ssf	3315	3335	Iono free float	178604.737		3.614
00002851.ssf	3315	3335	Iono free float	178604.718		1.935
00002854.ssf	3315	3442	Iono free float	403008.878		4.319
00002836.ssf	3315	3657	Iono free float	326448.732		3.512
00002857.ssf	3335	3300	Iono free float	368670.544		2.453
00002830.ssf	3335	3442	Iono free float	447983.535		4.949
00002848.ssf	3335	3657	Iono free float	231610.386		1.177
00004707.ssf	3402	3335	Iono free float	304413.942		4.679
00002749.ssf	3427	3159	Iono free float	321822.928		1.156
00002734.ssf	3427	3300	Iono free float	133959.430		3.187
00002752.ssf	3427	3442	Iono free float	151067.199		4.329
00002746.ssf	3427	3477	Iono free float	206812.272		2.999
00002740.ssf	3442	3159	Iono free float	376344.905		4.558
00002743.ssf	3477	3159	Iono free float	344605.387		3.290
00002770.ssf	3477	3159	Iono free float	344605.405		2.206
00002773.ssf	3477	3239	Iono free float	303229.307		2.815
00002782.ssf	3656	3239	Iono free float	291684.354		2.509
00002785.ssf	3656	3275	Iono free float	247732.961		1.761
00004704.ssf	3657	3402	Iono free float	328655.675		3.510
00004710.ssf	3657	3402	Iono free float	328655.700		2.424

***** End of Report *****

Redundant Vectors of RTSD99

From	To	Solution	File	Delta X	Delta Y	Delta Z
3052	3159	30	00002821.WAV	+0.0000	+0.0000	+0.0000
		31	00002824.WAV	-0.0319	+0.0273	-0.0124
3052	3442	27	00002812.WAV	+0.0000	+0.0000	+0.0000
		29	00002818.WAV	+0.0297	-0.0048	-0.0039
3084	3093	26	00002809.WAV	+0.0000	+0.0000	+0.0000
		44	00002869.WAV	+0.0066	-0.0123	-0.0143
3109	3159	11	00002764.WAV	+0.0000	+0.0000	+0.0000
		25	00002806.WAV	+0.0089	+0.0089	+0.0069
3109	3239	15	00002776.WAV	+0.0000	+0.0000	+0.0000
		22	00002797.WAV	-0.0026	-0.0036	-0.0105
3159	3442	3	00002740.WAV	+0.0000	+0.0000	+0.0000
		28	00002815.WAV	-0.0254	-0.0276	-0.0043
3159	3477	4	00002743.WAV	+0.0000	+0.0000	+0.0000
		13	00002770.WAV	-0.0167	+0.0145	+0.0162
3300	3442	8	00002755.WAV	+0.0000	+0.0000	+0.0000
		34	00002833.WAV	-0.0009	+0.0070	+0.0165
3315	3335	36	00002845.WAV	+0.0000	+0.0000	+0.0000
		38	00002851.WAV	-0.0096	+0.0031	-0.0156
3402	3657	41	00004704.WAV	+0.0000	+0.0000	+0.0000
		48	00004710.WAV	-0.0241	+0.0019	-0.0069

Global Network Closure of RTSD99

COORDINATE COMPUTATION SEQUENCE

```
Begin computations at point 3001
From                3001 using SOL#     9 VEC#  1 compute 3109
From                3109 using SOL#    11 VEC#  1 compute 3159
From                3159 using SOL#     3 VEC#  1 compute 3442
From                3442 using SOL#     7 VEC#  1 compute 3427
From                3427 using SOL#     1 VEC#  1 compute 3300
From                3300 using SOL#     2 VEC#  1 compute 3477
From                3477 using SOL#    14 VEC#  1 compute 3239
From                3239 using SOL#    16 VEC#  1 compute 3217
From                3217 using SOL#    19 VEC#  1 compute 3656
From                3656 using SOL#    18 VEC#  1 compute 3275
From                3300 using SOL#    32 VEC#  1 compute 3315
From                3315 using SOL#    35 VEC#  1 compute 3657
From                3657 using SOL#    37 VEC#  1 compute 3335
From                3335 using SOL#    47 VEC#  1 compute 3402
From                3442 using SOL#    27 VEC#  1 compute 3052
From                3052 using SOL#    24 VEC#  1 compute 3093
From                3093 using SOL#    26 VEC#  1 compute 3084
```

CLOSURES

SOL#	V#	FROM	TO	DELTA X	DELTA Y	DELTA Z
1	1	3300	3427	0.000	0.000	0.000
2	1	3477	3300	0.000	0.000	0.000
3	1	3159	3442	0.000	0.000	0.000
4	1	3159	3477	-0.011	-0.007	-0.014
5	1	3477	3427	0.012	0.001	0.001
6	1	3159	3427	0.001	-0.005	-0.012
7	1	3442	3427	0.000	0.000	0.000
8	1	3442	3300	-0.007	0.001	0.004
9	1	3109	3001	0.000	0.000	0.000
10	1	3239	3001	-0.039	0.067	0.034
11	1	3159	3109	0.000	0.000	0.000
12	1	3159	3001	0.012	0.006	0.008
13	1	3159	3477	0.005	-0.022	-0.030
14	1	3239	3477	0.000	0.000	0.000
15	1	3109	3239	0.021	-0.054	-0.038
16	1	3239	3217	0.000	0.000	0.000

17	1	3239	3656	0.000	0.011	0.000
18	1	3275	3656	0.000	0.000	0.000
19	1	3656	3217	0.000	0.000	0.000
20	1	3109	3217	0.024	-0.061	-0.026
21	1	3275	3217	-0.013	0.021	0.012
22	1	3109	3239	0.023	-0.050	-0.027
23	1	3275	3109	-0.018	0.042	0.067
24	1	3093	3052	0.000	0.000	0.000
25	1	3109	3159	-0.009	-0.009	-0.007
26	1	3084	3093	0.000	0.000	0.000
27	1	3442	3052	0.000	0.000	0.000
28	1	3442	3159	-0.025	-0.028	-0.004
29	1	3442	3052	0.030	-0.005	-0.004
30	1	3159	3052	0.041	-0.003	-0.028
31	1	3159	3052	0.009	0.024	-0.040
32	1	3300	3315	0.000	0.000	0.000
33	1	3442	3335	-0.032	-0.068	0.031
34	1	3442	3300	-0.008	0.008	0.020
35	1	3657	3315	0.000	0.000	0.000
36	1	3335	3315	-0.001	0.007	0.016
37	1	3657	3335	0.000	0.000	0.000
38	1	3335	3315	-0.010	0.010	0.001
39	1	3442	3315	-0.020	-0.056	0.028
40	1	3300	3335	0.012	-0.032	0.015
41	1	3402	3657	-0.005	-0.003	-0.005
42	1	3477	3001	-0.016	0.048	0.054
43	1	3093	3159	-0.046	0.006	-0.003
44	1	3084	3093	-0.007	0.012	0.014
45	1	3084	3052	-0.006	-0.009	0.019
46	1	3093	3109	-0.035	0.017	0.000
47	1	3335	3402	0.000	0.000	0.000

48	1	3402	3657	0.019	-0.005	0.002

COORDINATE ADJUSTMENT SUMMARY
NETWORK = RTSD1999
TIME = Sun Jul 9 17:46:20 2000

Datum = WGS-84
Coordinate System = Geographic
Zone = Global

Network Adjustment Constraints:
Inner constraints in y
Inner constraints in x
Inner constraints in H

POINT	NAME	OLD COORDS	ADJUST	NEW COORDS	1.96σ
1	3001				
	LAT=	15° 23' 01.539918"	-0.000059"	15° 23' 01.539858"	0.006079m
	LON=	100° 00' 47.542329"	-0.000091"	100° 00' 47.542237"	0.009394m
	ELL HT=	107.7514m	-0.0027m	107.7487m	0.017874m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
2	3052				
	LAT=	14° 54' 04.065175"	-0.000069"	14° 54' 04.065106"	0.005873m
	LON=	104° 24' 57.387126"	+0.000041"	104° 24' 57.387167"	0.009544m
	ELL HT=	115.2129m	-0.0014m	115.2115m	0.015524m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
3	3084				
	LAT=	17° 37' 56.596307"	+0.000078"	17° 37' 56.596386"	0.008884m
	LON=	104° 28' 56.307913"	-0.000029"	104° 28' 56.307884"	0.014621m
	ELL HT=	120.7203m	-0.0016m	120.7187m	0.034379m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
4	3093				
	LAT=	17° 21' 31.562741"	+0.000047"	17°21' 31.562788"	0.006918m
	LON=	103° 06' 17.710320"	-0.000024"	103°06' 17.710296"	0.013038m
	ELL HT=	140.3798m	-0.0005m	140.3793m	0.033328m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
5	3109				
	LAT=	17° 16' 48.108716"	-0.000027"	17° 16' 48.108689"	0.004632m
	LON=	101° 08' 43.771909"	-0.000018"	101° 08' 43.771891"	0.006617m
	ELL HT=	321.7320m	-0.0007m	321.7313m	0.011884m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
6	3159				
	LAT=	15° 51' 12.941172"	-0.000033"	15° 51' 12.941139"	0.003896m
	LON=	102° 04' 01.545971"	-0.000001"	102° 04' 01.545970"	0.005872m
	ELL HT=	158.8465m	-0.0002m	158.8463m	0.010620m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
7	3217				
	LAT=	18° 20' 07.230221"	+0.000029"	18° 20' 07.230250"	0.006614m
	LON=	99° 22' 16.357885"	-0.000020"	99° 22' 16.357865"	0.009035m
	ELL HT=	240.3468m	+0.0001m	240.3469m	0.014218m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN

```
 8 3239
       LAT=   16° 43' 16.551006" -0.000006"  16° 43' 16.551000"    0.005551m
       LON=   98° 35' 16.548185" -0.000014"  98° 35' 16.548171"    0.007713m
    ELL HT=           177.1558m   -0.0004m          177.1554m    0.012889m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

 9 3275
       LAT=   20° 16' 28.851332" +0.000123"  20° 16' 28.851455"    0.008727m
       LON=  100° 05' 10.890574" -0.000036" 100° 05' 10.890538"    0.013181m
    ELL HT=           332.1852m   +0.0004m          332.1856m    0.027033m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

10 3300
       LAT=   12° 30' 59.350347" -0.000059"  12° 30' 59.350289"    0.005193m
       LON=   99° 58' 30.868222" +0.000047"  99° 58' 30.868269"    0.007537m
    ELL HT=           -27.2693m   +0.0011m          -27.2682m    0.013539m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

11 3315
       LAT=   10° 36' 34.344978" +0.000000"  10° 36' 34.344978"    0.007508m
       LON=   99° 04' 32.200627" +0.000014"  99° 04' 32.200641"    0.012221m
    ELL HT=           -4.3821m   +0.0010m           -4.3810m    0.019557m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

12 3335
       LAT=    9° 11' 08.128235" +0.000002"   9° 11' 08.128237"    0.007028m
       LON=   99° 50' 37.348321" +0.000004"  99° 50' 37.348325"    0.010990m
    ELL HT=          -19.2483m   +0.0013m          -19.2470m    0.018020m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

13 3402
       LAT=    6° 43' 57.190741" +0.000005"   6° 43' 57.190746"    0.008791m
       LON=  101° 05' 48.394682" -0.000026" 101° 05' 48.394655"    0.012831m
    ELL HT=           39.9159m   +0.0004m           39.9164m    0.019542m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

14 3427
       LAT=   13° 07' 13.910323" -0.000033"  13° 07' 13.910290"    0.005103m
       LON=  101° 02' 40.955914" +0.000038" 101° 02' 40.955952"    0.006905m
    ELL HT=           51.6247m   +0.0007m           51.6254m    0.011598m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

15 3442
       LAT=   12° 27' 24.793534" -0.000033"  12° 27' 24.793501"    0.004760m
       LON=  102° 15' 38.662755" +0.000084" 102° 15' 38.662840"    0.007633m
    ELL HT=          -17.3613m   -0.0003m          -17.3616m    0.013341m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

16 3477
       LAT=   14° 06' 05.581819" -0.000009"  14° 06' 05.581809"    0.005187m
       LON=   99° 25' 03.991980" +0.000032"  99° 25' 03.992012"    0.008343m
    ELL HT=            4.7879m   +0.0010m            4.7889m    0.015762m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

17 3656
       LAT=   19° 17' 18.033008" +0.000044"  19° 17' 18.033053"    0.007404m
       LON=   97° 57' 51.095717" -0.000018"  97° 57' 51.095698"    0.009445m
    ELL HT=          195.8522m   +0.0007m          195.8529m    0.015014m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN
```

18 3657

LAT=	7° 45' 32.648606"	-0.000001"	7° 45' 32.648605"	0.008248m
LON=	98° 18' 12.944842"	+0.000016"	98° 18' 12.944859"	0.012203m
ELL HT=	-1.6946m	+0.0010m	-1.6936m	0.019054m
ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN

ADJUSTMENT STATISTICS SUMMARY
NETWORK = RTSD1999
TIME = Sun Jul 9 17:46:20 2000

ADJUSTMENT SUMMARY

Network Reference Factor = 1.01
Chi-Square Test (95%) = PASS
Degrees of Freedom = 93.00

GPS OBSERVATIONS
Reference Factor = 1.01
r = 93.00

GPS Solution	1	Reference Factor =	0.83	r =	1.37
GPS Solution	2	Reference Factor =	0.90	r =	2.37
GPS Solution	3	Reference Factor =	0.99	r =	2.74
GPS Solution	4	Reference Factor =	0.92	r =	2.48
GPS Solution	5	Reference Factor =	0.99	r =	2.09
GPS Solution	6	Reference Factor =	0.79	r =	1.18
GPS Solution	7	Reference Factor =	0.76	r =	1.51
GPS Solution	8	Reference Factor =	0.58	r =	1.51
GPS Solution	9	Reference Factor =	0.63	r =	1.16
GPS Solution	10	Reference Factor =	1.07	r =	2.46
GPS Solution	11	Reference Factor =	1.06	r =	1.93
GPS Solution	12	Reference Factor =	0.79	r =	1.95
GPS Solution	13	Reference Factor =	1.47	r =	1.40
GPS Solution	14	Reference Factor =	1.07	r =	2.61
GPS Solution	15	Reference Factor =	1.19	r =	1.81
GPS Solution	16	Reference Factor =	0.49	r =	1.22
GPS Solution	17	Reference Factor =	0.85	r =	1.39
GPS Solution	18	Reference Factor =	0.85	r =	1.17
GPS Solution	19	Reference Factor =	0.73	r =	1.18
GPS Solution	20	Reference Factor =	0.89	r =	2.25
GPS Solution	21	Reference Factor =	0.78	r =	1.63
GPS Solution	22	Reference Factor =	0.73	r =	1.79
GPS Solution	23	Reference Factor =	1.22	r =	2.83
GPS Solution	24	Reference Factor =	1.49	r =	2.04
GPS Solution	25	Reference Factor =	0.92	r =	1.71
GPS Solution	26	Reference Factor =	1.02	r =	2.39
GPS Solution	27	Reference Factor =	1.04	r =	2.70
GPS Solution	28	Reference Factor =	1.05	r =	2.82
GPS Solution	29	Reference Factor =	0.30	r =	0.79
GPS Solution	30	Reference Factor =	1.20	r =	2.25
GPS Solution	31	Reference Factor =	0.98	r =	2.96
GPS Solution	32	Reference Factor =	1.12	r =	2.89
GPS Solution	33	Reference Factor =	1.00	r =	2.83
GPS Solution	34	Reference Factor =	1.25	r =	2.69
GPS Solution	35	Reference Factor =	1.03	r =	1.51
GPS Solution	36	Reference Factor =	0.44	r =	1.02
GPS Solution	37	Reference Factor =	0.77	r =	1.81
GPS Solution	38	Reference Factor =	1.26	r =	2.74
GPS Solution	39	Reference Factor =	0.57	r =	1.29
GPS Solution	40	Reference Factor =	1.08	r =	1.30
GPS Solution	41	Reference Factor =	1.00	r =	2.24
GPS Solution	42	Reference Factor =	0.93	r =	0.59
GPS Solution	43	Reference Factor =	1.08	r =	2.52

```
GPS Solution   44 Reference Factor =    1.19   r =  2.80
GPS Solution   45 Reference Factor =    0.88   r =  1.68
GPS Solution   46 Reference Factor =    0.77   r =  0.68
GPS Solution   47 Reference Factor =    1.21   r =  2.67
GPS Solution   48 Reference Factor =    0.92   r =  2.03
```

WEIGHTING STRATEGIES:

GPS OBSERVATIONS:

Scalar Weighting Strategy:

Alternative Scalar Set Applied to Individual GPS Solutions:

Solution 1 = 1.89
Solution 2 = 4.75
Solution 3 = 4.36
Solution 4 = 3.48
Solution 5 = 3.57
Solution 6 = 1.86
Solution 7 = 1.36
Solution 8 = 1.23
Solution 9 = 2.61
Solution 10 = 8.69
Solution 11 = 1.74
Solution 12 = 2.43
Solution 13 = 1.53
Solution 14 = 7.09
Solution 15 = 0.79
Solution 16 = 0.09
Solution 17 = 1.04
Solution 18 = 4.20
Solution 19 = 0.63
Solution 20 = 5.09
Solution 21 = 5.66
Solution 22 = 0.58
Solution 23 = 21.57
Solution 24 = 6.99
Solution 25 = 1.22
Solution 26 = 6.40
Solution 27 = 3.57
Solution 28 = 5.54
Solution 29 = 0.36
Solution 30 = 4.75
Solution 31 = 18.87
Solution 32 = 20.02
Solution 33 = 8.08
Solution 34 = 4.95
Solution 35 = 1.10
Solution 36 = 0.28
Solution 37 = 1.06
Solution 38 = 7.09
Solution 39 = 0.07
Solution 40 = 0.93
Solution 41 = 3.61
Solution 42 = 1.92
Solution 43 = 3.42
Solution 44 = 14.30
Solution 45 = 6.55
Solution 46 = 0.72
Solution 47 = 14.92
Solution 48 = 7.66

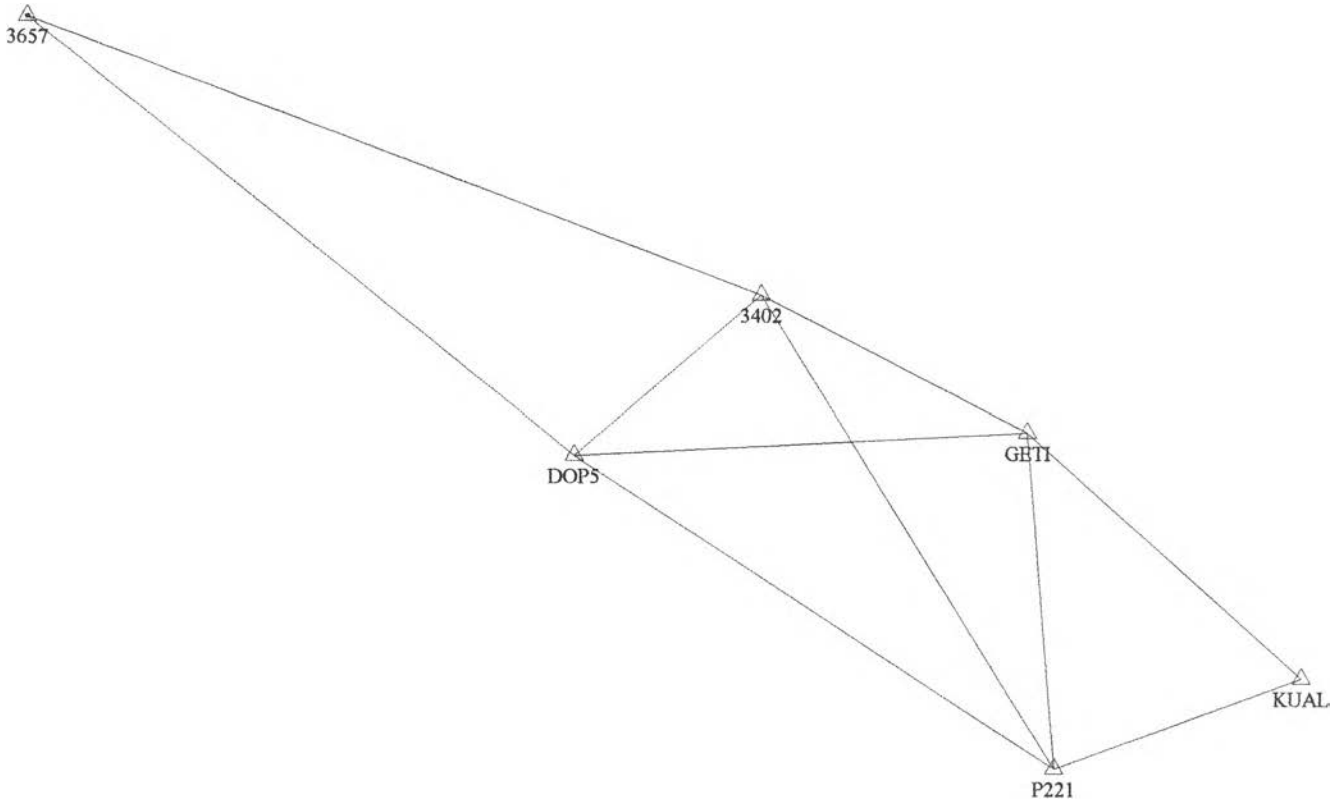
```
          No summation weighting strategy was used

          Station Error Strategy:
H.I. error = 0.0030
Tribrach error = 0.0030
```

ภาคผนวก ข-4

ผลการปรับแก้ แบบ free adjustment โครงข่าย ไทย-มาเลเซีย

Network Map: Thai_Malaysia



50000m

Project:	Thai_Malaysia
Supervisor:	Dr.Chugiat Wichiencharoen
Date Created:	19/7/00 7:47
Date Last Accessed:	14/8/00 17:50
Project Directory:	C:\GPSURVEY\projects\Thai_Mal
Antenna Type:	Compact L1/L2 w/Ground Plane
Antenna Measurement Method:	Measured to bottom of notch on ground plane
Antenna Group:	GPSurvey
Receiver Type:	4000SSE
Coordinate System:	Geographic
Zone:	WGS84
Linear Unit:	Meter
Timezone:	THAILAND : 7:00
Number of Stations:	6
Number of Baselines:	11
No. of Continuous Kinematic Solns:	0

**** SSF/SSK Solution Output Files For Selected Baselines ****

.ssf/.ssk Solution Output File	From Station Short Name	To Station Short Name	Solution Type	Slope	Ratio	Reference Variance
00004725.ssf	3402	GETI	Iono free float	124835.874		1.868
00004468.ssf	3402	GETI	Iono free float	124835.874		1.868
00004477.ssf	3402	P221	Iono free float	228701.752		2.479
00004474.ssf	3657	3402	Iono free float	328655.653		1.335
00004462.ssf	3657	DOP5	Iono free float	291488.060		0.998
00004465.ssf	DOP5	3402	Iono free float	102444.662		1.430
00004483.ssf	DOP5	GETI	Iono free float	190629.359		2.260
00004489.ssf	GETI	KUAL	Iono free float	152228.992		1.543
00004471.ssf	GETI	P221	Iono free float	137529.268		1.336
00004480.ssf	P221	DOP5	Iono free float	238437.138		2.376
00004486.ssf	P221	KUAL	Iono free float	110051.252		1.628

***** End of Report *****

Global Network Closure of Thai-Malaysia

COORDINATE COMPUTATION SEQUENCE

Begin computations at point 3402

From	3402	using SOL#	2	VEC# 1	compute DOP5
From	DOP5	using SOL#	1	VEC# 1	compute 3657
From	DOP5	using SOL#	7	VEC# 1	compute P221
From	P221	using SOL#	4	VEC# 1	compute GETI
From	GETI	using SOL#	10	VEC# 1	compute KUAL

CLOSURES

SOL#	V#	FROM	TO	DELTA X	DELTA Y	DELTA Z
1	1	DOP5	3657	0.000	0.000	0.000
2	1	3402	DOP5	0.000	0.000	0.000
3	1	GETI	3402	-0.049	0.010	0.009
4	1	P221	GETI	0.000	0.000	0.000
5	1	3402	3657	0.009	-0.011	-0.019
6	1	P221	3402	-0.025	0.072	0.027
7	1	DOP5	P221	0.000	0.000	0.000
8	1	GETI	DOP5	-0.007	-0.003	-0.005
9	1	KUAL	P221	-0.056	0.014	0.020
10	1	KUAL	GETI	0.000	0.000	0.000

COORDINATE ADJUSTMENT SUMMARY
NETWORK = Thai_Malays
TIME = Tue Jul 18 18:06:37 2000

Datum = WGS-84
Coordinate System = Geographic
Zone = Global

Network Adjustment Constraints:
  Inner constraints in y
  Inner constraints in x
  Inner constraints in H

POINT	NAME	OLD COORDS	ADJUST	NEW COORDS	1.96σ
1	3402				
	LAT=	6° 43'57.190963"	-0.000008"	6° 43'57.190955"	0.005098m
	LON=	101° 05'48.392683"	-0.000030"	101° 05'48.392653"	0.012536m
	ELL HT=	40.7740m	-0.0007m	40.7733m	0.020577m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
2	3657				
	LAT=	7° 45'32.648120"	-0.000013"	7° 45'32.648107"	0.005943m
	LON=	98° 18'12.943277"	-0.000033"	98° 18'12.943244"	0.010957m
	ELL HT=	-1.7836m	-0.0011m	-1.7847m	0.018338m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
3	DOP5				
	LAT=	6° 08'22.989507"	-0.000019"	6° 08'22.989488"	0.004290m
	LON=	10° 23'06.572587"	-0.000036"	100° 23'06.572551"	0.009556m
	ELL HT=	-10.0911m	-0.0011m	-10.0923m	0.017303m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
4	GETI				
	LAT=	6° 13'34.294121"	+0.000007"	6° 13'34.294127"	0.004414m
	LON=	102° 06'19.664328"	+0.000041"	102° 06'19.664370"	0.010936m
	ELL HT=	-0.4422m	+0.0005m	-0.4416m	0.019511m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
5	KUAL				
	LAT=	5° 19'08.003145"	+0.000039"	5° 19'08.003183"	0.010682m
	LON=	103° 08'20.922038"	+0.000107"	103° 08'20.922146"	0.040965m
	ELL HT=	55.0145m	+0.0027m	55.0172m	0.080359m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
6	P221				
	LAT=	4° 59'11.097087"	-0.000006"	4° 59'11.097082"	0.004940m
	LON=	102° 12'12.892209"	-0.000049"	102° 12'12.892160"	0.010495m
	ELL HT=	95.7377m	-0.0003m	95.7373m	0.017712m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN

ADJUSTMENT STATISTICS SUMMARY
NETWORK = Thai_Malays
TIME = Tue Jul 18 18:06:37 2000

ADJUSTMENT SUMMARY

Network Reference Factor = 1.00
Chi-Square Test (95%) = PASS
Degrees of Freedom = 15.00

GPS OBSERVATIONS
Reference Factor = 1.00
r = 15.00

GPS Solution	1	Reference Factor =	1.17	r =	0.53
GPS Solution	2	Reference Factor =	1.16	r =	2.53
GPS Solution	3	Reference Factor =	1.05	r =	2.14
GPS Solution	4	Reference Factor =	0.71	r =	1.49
GPS Solution	5	Reference Factor =	1.17	r =	0.57
GPS Solution	6	Reference Factor =	1.04	r =	2.75
GPS Solution	7	Reference Factor =	0.39	r =	0.67
GPS Solution	8	Reference Factor =	0.57	r =	1.41
GPS Solution	9	Reference Factor =	1.14	r =	1.62
GPS Solution	10	Reference Factor =	0.99	r =	1.30

WEIGHTING STRATEGIES:

GPS OBSERVATIONS:
Scalar Weighting Strategy:
Alternative Scalar Set Applied to Individual GPS Solutions:
Solution 1 = 1.08
Solution 2 = 6.88
Solution 3 = 4.50
Solution 4 = 2.35
Solution 5 = 1.08
Solution 6 = 10.79
Solution 7 = 0.25
Solution 8 = 1.88
Solution 9 = 12.93
Solution 10 = 9.61

No summation weighting strategy was used

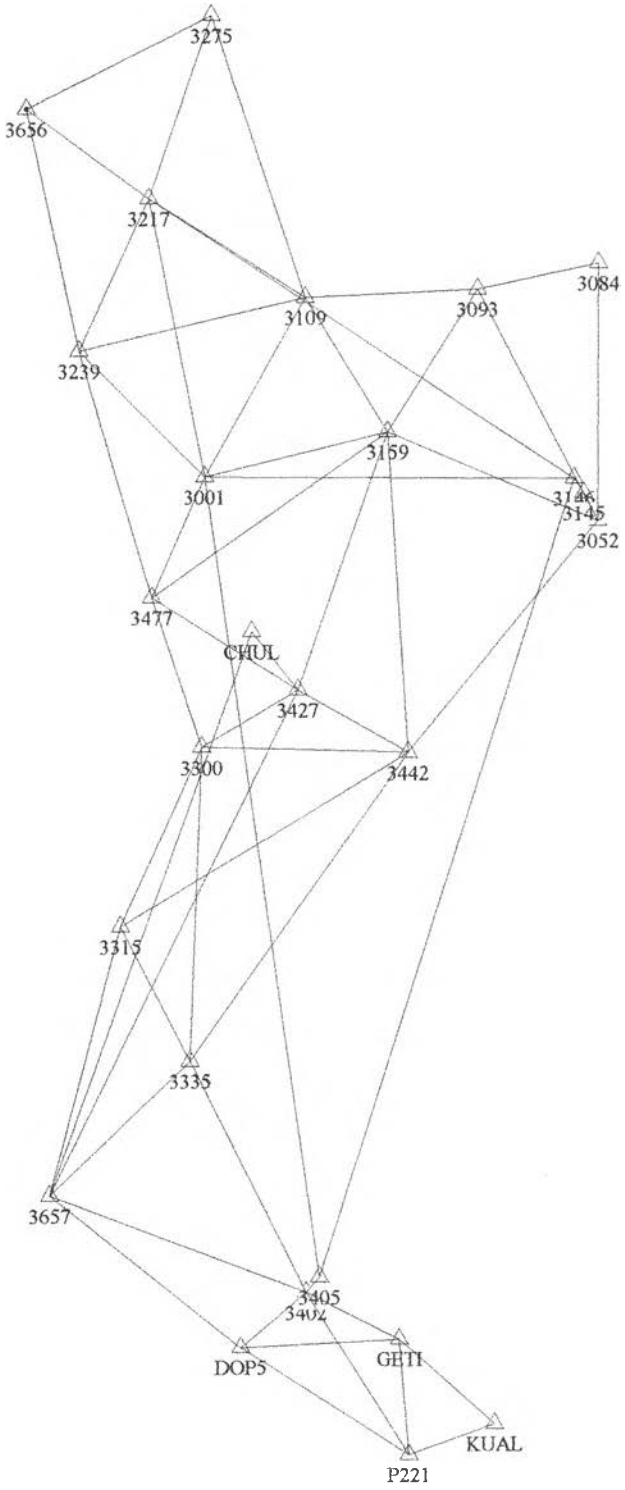
Station Error Strategy:
H.I. error = 0.0030
Tribrach error = 0.0030

ภาคผนวก ค

ภาคผนวก ค -1

ข้อมูลเส้นฐานและข้อมูลการตรวจสอบเส้นฐานก่อนการปรับแก้

Network Map: High Accuracy GPS Network



200000m

Project:	High Accuracy GPS Network
Supervisor:	Dr.Chugiat Wichiencharoen
Date Created:	10/7/00 9:45
Date Last Accessed:	1/12/00 20:15
Project Directory:	C:\GPSURVEY\projects\High_Acc
Antenna Type:	Compact L1/L2 w/Ground Plane
Antenna Measurement Method:	Measured to bottom of notch on ground plane
Antenna Group:	GPSurvey
Receiver Type:	4000SSE
Coordinate System:	Geographic
Zone:	WGS84
Linear Unit:	Meter
Timezone:	THAILAND : 7:00
Number of Stations:	26
Number of Baselines:	115
No. of Continuous Kinematic Solns:	0

**** SSF/SSK Solution Output Files For Selected Baselines ****

.ssf/.ssk Solution Output File	From Station Short Name	To Station Short Name	Solution Type	Slope	Ratio	Reference Variance
00003477.ssf	3001	3109	Iono free float	242217.239		1.316
00003424.ssf	3001	3146	Iono free float	444687.825		4.276
00003420.ssf	3001	3146	Iono free fixed	444687.809	3.8	2.587
00003416.ssf	3001	3146	Iono free fixed	444687.814	15.2	2.451
00003292.ssf	3001	3146	Iono free float	444687.755		1.840
00003486.ssf	3001	3159	Iono free float	226293.058		6.042
00003308.ssf	3001	3217	Iono free float	333701.626		2.305
00003312.ssf	3001	3217	Iono free float	333701.627		2.984
00003320.ssf	3001	3217	Iono free fixed	333701.609	44.0	4.983
00003324.ssf	3001	3217	Iono free float	333701.632		2.405
00003332.ssf	3001	3217	Iono free float	333701.613		2.524
00003336.ssf	3001	3217	Iono free fixed	333701.628	1.5	5.865
00003480.ssf	3001	3239	Iono free float	212515.755		1.866
00003356.ssf	3001	3405	Iono free float	948274.973		3.744
00003368.ssf	3001	3405	Iono free fixed	948274.938	10.0	5.909
00003376.ssf	3001	3405	Iono free float	948274.982		3.122
00003392.ssf	3001	3405	Iono free float	948274.968		3.985
00003428.ssf	3001	3405	Iono free float	948274.932		6.443
00003582.ssf	3001	3477	Iono free float	155683.460		3.401
00003591.ssf	3052	3084	Iono free float	302305.714		2.271
00003522.ssf	3052	3093	Iono free float	305958.969		2.681
00003904.ssf	3052	3145	Iono free fixed	36667.152	22.2	1.106
00003540.ssf	3052	3159	Iono free float	273289.465		3.843
00003543.ssf	3052	3159	Iono free float	273289.496		8.619
00003531.ssf	3052	3442	Iono free float	356998.348		5.480
00003537.ssf	3052	3442	Iono free float	356998.329		7.439
00003528.ssf	3093	3084	Iono free float	149382.211		1.866
00003588.ssf	3093	3084	Iono free float	149382.205		1.616
00003594.ssf	3109	3093	Iono free float	208474.228		3.253
00003483.ssf	3109	3159	Iono free float	185991.418		2.216
00003519.ssf	3109	3275	Iono free float	349748.280		1.397
00003288.ssf	3146	3001	Iono free float	444687.757		2.185
00003284.ssf	3146	3001	Iono free float	444687.817		5.852
00003296.ssf	3146	3001	Iono free fixed	444687.801	1.9	2.879
00003300.ssf	3146	3001	Iono free float	444687.826		2.335
00003412.ssf	3146	3001	Iono free fixed	444687.829	15.5	2.417
00003900.ssf	3146	3145	Iono free fixed	20461.194	24.0	0.650
00003276.ssf	3146	3217	Iono free float	607281.622		5.137
00003272.ssf	3146	3217	Iono free fixed	607281.640	15.2	3.239
00003248.ssf	3146	3217	Iono free fixed	607281.590	3.4	4.522
00003344.ssf	3146	3405	Iono free float	987342.936		3.599
00003352.ssf	3146	3405	Iono free float	987342.977		2.310
00003380.ssf	3146	3405	Iono free float	987342.990		2.681
00003388.ssf	3146	3405	Iono free float	987342.983		3.919
00003408.ssf	3146	3405	Iono free float	987342.967		5.243
00003585.ssf	3159	3093	Iono free float	200017.426		2.647
00003525.ssf	3159	3109	Iono free float	185991.428		2.580
00003534.ssf	3159	3442	Iono free float	376344.905		5.139
00003304.ssf	3217	3001	Iono free float	333701.644		1.824
00003316.ssf	3217	3001	Iono free float	333701.641		1.537

00003328.ssf	3217	3001	Iono free float	333701.627		3.466
00003510.ssf	3217	3109	Iono free float	221415.116		1.756
00003252.ssf	3217	3146	Iono free float	607281.608		6.037
00003256.ssf	3217	3146	Iono free fixed	607281.653	3.4	6.512
00003260.ssf	3217	3146	Iono free float	607281.641		1.170
00003264.ssf	3217	3146	Iono free fixed	607281.600	1.6	4.465
00003268.ssf	3217	3146	Iono free fixed	607281.660	3.0	2.106
00003280.ssf	3217	3146	Iono free fixed	607281.646	5.7	3.675
00003498.ssf	3217	3239	Iono free float	197047.923		2.578
00003513.ssf	3217	3275	Iono free float	227450.422		1.753
00003507.ssf	3217	3656	Iono free float	181999.172		1.328
00003495.ssf	3239	3109	Iono free float	279260.882		1.744
00003516.ssf	3239	3109	Iono free float	279260.883		2.856
00003474.ssf	3300	3442	Iono free float	248511.514		5.500
00003552.ssf	3300	3442	Iono free float	248511.515		5.746
00003456.ssf	3300	3477	Iono free float	185463.771		5.261
00003546.ssf	3315	3300	Iono free float	232635.237		4.632
00003564.ssf	3315	3335	Iono free float	178604.737		3.614
00003570.ssf	3315	3335	Iono free float	178604.718		1.935
00003573.ssf	3315	3442	Iono free float	403008.878		4.319
00003555.ssf	3315	3657	Iono free float	326448.732		3.512
00003576.ssf	3335	3300	Iono free float	368670.544		2.453
00003549.ssf	3335	3442	Iono free float	447983.535		4.949
00003567.ssf	3335	3657	Iono free float	231610.386		1.177
00004716.ssf	3402	3335	Iono free float	304413.942		4.679
00004728.ssf	3402	GETI	Iono free float	124835.874		1.868
00005183.ssf	3402	P221	Iono free float	228701.752		2.479
00003340.ssf	3405	3001	Iono free float	948274.957		3.943
00003360.ssf	3405	3001	Iono free float	948274.938		17.178
00003364.ssf	3405	3001	Iono free fixed	948274.981	2.4	5.399
00003396.ssf	3405	3001	Iono free float	948274.971		3.037
00003348.ssf	3405	3146	Iono free float	987342.841		3.927
00003372.ssf	3405	3146	Iono free float	987342.890		3.849
00003384.ssf	3405	3146	Iono free float	987342.954		5.708
00003404.ssf	3405	3146	Iono free float	987343.003		1.912
00004735.ssf	3405	3402	Iono free fixed	23859.995	1.8	21.586
00003468.ssf	3427	3159	Iono free float	321822.928		1.156
00003453.ssf	3427	3300	Iono free float	133959.430		3.187
00003471.ssf	3427	3442	Iono free float	151067.199		4.329
00003465.ssf	3427	3477	Iono free float	206812.272		2.999
00003440.ssf	3427	CHUL	Iono free float	87792.419		3.373
00003442.ssf	3427	CHUL	Iono free float	87792.421		2.422
00003444.ssf	3427	CHUL	Iono free float	87792.433		4.433
00003459.ssf	3442	3159	Iono free float	376344.905		4.558
00003462.ssf	3477	3159	Iono free float	344605.387		3.290
00003489.ssf	3477	3159	Iono free float	344605.405		2.206
00003492.ssf	3477	3239	Iono free float	303229.307		2.815
00003501.ssf	3656	3239	Iono free float	291684.354		2.509
00003504.ssf	3656	3275	Iono free float	247732.961		1.761
00004713.ssf	3657	3402	Iono free float	328655.675		3.510
00004719.ssf	3657	3402	Iono free float	328655.700		2.424
00004722.ssf	3657	3402	Iono free float	328655.653		1.335
00003432.ssf	3657	3427	Iono free float	664300.827		2.182
00003437.ssf	3657	3427	Iono free float	664300.829		2.101

00003450.ssf	3657	3427	Iono free float	664390.804	1.631
00003435.ssf	3657	CHUL	Iono free float	704179.337	1.795
00003446.ssf	3657	CHUL	Iono free float	704179.342	2.150
00003448.ssf	3657	CHUL	Iono free float	704179.324	2.515
00004378.ssf	3657	DOP5	Iono free float	291488.060	0.998
00005180.ssf	DOP5	3402	Iono free float	102444.662	1.430
00004399.ssf	DOP5	GETI	Iono free float	190629.359	2.260
00004405.ssf	GETI	KUAL	Iono free float	152228.992	1.543
00004387.ssf	GETI	P221	Iono free float	137529.268	1.336
00004396.ssf	P221	DOP5	Iono free float	238437.138	2.376
00004402.ssf	P221	KUAL	Iono free float	110051.252	1.628

***** End of Report *****

Redundant Vectors of High Accuracy GPS Network
(มีความคลาดเคลื่อนแฝงอยู่ในโครงข่าย)

From	To	Solution	File	Delta X	Delta Y	Delta Z
3001	3146	10	00003284.WAV	+0.0000	+0.0000	+0.0000
		11	00003288.WAV	-0.0402	-0.0947	-0.0278
		12	00003292.WAV	-0.0419	-0.0976	-0.0283
		13	00003296.WAV	+0.0287	-0.2070	-0.0523
		14	00003300.WAV	+0.0398	-0.1392	-0.0497
		39	00003424.WAV	+0.0141	-0.0267	-0.0220
		42	00003412.WAV	+0.0190	-0.0298	-0.0009
		43	00003416.WAV	+0.0066	-0.0450	-0.0281
		44	00003420.WAV	+0.0053	-0.0606	-0.0165
3001	3217	15	00003304.WAV	+0.0000	+0.0000	+0.0000
		16	00003308.WAV	+0.0014	-0.0366	+0.0088
		17	00003312.WAV	-0.0122	-0.0394	+0.0112
		18	00003316.WAV	-0.0013	+0.0104	+0.0065
		19	00003320.WAV	+0.0459	+0.0057	+0.0267
		20	00003324.WAV	-0.0095	+0.0170	+0.0195
		21	00003328.WAV	+0.0107	+0.0825	+0.0366
		22	00003332.WAV	-0.0056	+0.0118	+0.0378
		23	00003336.WAV	+0.0055	+0.0594	+0.0310
3001	3405	24	00003340.WAV	+0.0000	+0.0000	+0.0000
		28	00003356.WAV	-0.0334	+0.1091	+0.0406
		29	00003360.WAV	+0.1202	+0.0731	-0.0289
		30	00003364.WAV	-0.0468	-0.0302	+0.0287
		31	00003368.WAV	-0.0149	-0.0476	-0.0247
		33	00003376.WAV	+0.0064	-0.0380	+0.0185
		37	00003392.WAV	-0.0124	-0.0500	+0.0060
		38	00003396.WAV	-0.0768	-0.0710	+0.0168
		45	00003428.WAV	+0.1724	-0.0580	-0.0662
3052	3159	84	00003540.WAV	+0.0000	+0.0000	+0.0000
		85	00003543.WAV	-0.0319	+0.0273	-0.0124
3052	3442	81	00003531.WAV	+0.0000	+0.0000	+0.0000
		83	00003537.WAV	+0.0297	-0.0048	-0.0039
3084	3093	80	00003528.WAV	+0.0000	+0.0000	+0.0000
		100	00003588.WAV	+0.0066	-0.0123	-0.0143
3109	3159	65	00003483.WAV	+0.0000	+0.0000	+0.0000
		79	00003525.WAV	+0.0089	+0.0089	+0.0069
3109	3239	69	00003495.WAV	+0.0000	+0.0000	+0.0000
		76	00003516.WAV	-0.0026	-0.0036	-0.0105
3146	3217	1	00003248.WAV	+0.0000	+0.0000	+0.0000
		2	00003252.WAV	-0.0168	-0.0365	-0.0064
		3	00003256.WAV	-0.0573	+0.0537	-0.0289
		4	00003260.WAV	-0.0608	+0.0541	+0.0000
		5	00003264.WAV	-0.0121	+0.0303	-0.0011
		6	00003268.WAV	-0.0793	+0.0905	-0.0077
		7	00003272.WAV	-0.0710	+0.2096	+0.0134
		8	00003276.WAV	-0.0591	+0.1391	+0.0299
		9	00003280.WAV	-0.0859	+0.2307	+0.0258

3146	3405	25	00003344.WAV	+0.0000	+0.0000	+0.0000
		26	00003348.WAV	+0.1834	+0.1366	-0.0115
		27	00003352.WAV	+0.0303	+0.0835	+0.0760
		32	00003372.WAV	+0.1693	+0.0310	+0.0091
		34	00003380.WAV	+0.0321	-0.0011	+0.0671
		35	00003384.WAV	+0.1403	-0.0437	+0.0495
		36	00003388.WAV	+0.0231	-0.0304	+0.0491
		40	00003404.WAV	+0.0278	+0.0572	+0.0964
		41	00003408.WAV	+0.1214	-0.0163	+0.0649
3159	3442	57	00003459.WAV	+0.0000	+0.0000	+0.0000
		82	00003534.WAV	-0.0254	-0.0276	-0.0043
3159	3477	58	00003462.WAV	+0.0000	+0.0000	+0.0000
		67	00003489.WAV	-0.0167	+0.0145	+0.0162
3300	3442	62	00003474.WAV	+0.0000	+0.0000	+0.0000
		88	00003552.WAV	-0.0009	+0.0070	+0.0165
3315	3335	92	00003564.WAV	+0.0000	+0.0000	+0.0000
		94	00003570.WAV	-0.0096	+0.0031	-0.0156
3402	3657	91	00003561.WAV	+0.0000	+0.0000	+0.0000
		97	00003579.WAV	-0.0241	+0.0019	-0.0066
		109	00004390.WAV	-0.1655	+0.9220	+0.1341
3427	3657	46	00003432.WAV	+0.0000	+0.0000	+0.0000
		48	00003437.WAV	-0.0111	+0.0096	-0.0005
		54	00003450.WAV	+0.0358	-0.0061	-0.0112
3427	CHUL	49	00003440.WAV	+0.0000	+0.0000	+0.0000
		50	00003442.WAV	-0.0161	+0.0257	+0.0137
		51	00003444.WAV	-0.0273	+0.0111	+0.0060
3657	CHUL	47	00003435.WAV	+0.0000	+0.0000	+0.0000
		52	00003446.WAV	-0.0044	-0.0053	-0.0085
		53	00003448.WAV	-0.0582	+0.0324	+0.0025

Global Network Closure of High Accuracy GPS Network
(มีความคลาดเคลื่อนแฝงอยู่ในโครงข่าย)

COORDINATE COMPUTATION SEQUENCE

```
Begin computations at point 3001
From                3001 using SOL#    10 VEC#  1 compute 3146
From                3146 using SOL#     1 VEC#  1 compute 3217
From                3217 using SOL#    70 VEC#  1 compute 3239
From                3239 using SOL#    68 VEC#  1 compute 3477
From                3477 using SOL#    56 VEC#  1 compute 3300
From                3300 using SOL#    55 VEC#  1 compute 3427
From                3427 using SOL#    46 VEC#  1 compute 3657
From                3657 using SOL#    47 VEC#  1 compute CHUL
From                3657 using SOL#    89 VEC#  1 compute 3315
From                3315 using SOL#    92 VEC#  1 compute 3335
From                3335 using SOL#    87 VEC#  1 compute 3442
From                3442 using SOL#    57 VEC#  1 compute 3159
From                3159 using SOL#    65 VEC#  1 compute 3109
From                3109 using SOL#    77 VEC#  1 compute 3275
From                3275 using SOL#    72 VEC#  1 compute 3656
From                3109 using SOL#   102 VEC#  1 compute 3093
From                3093 using SOL#    78 VEC#  1 compute 3052
From                3052 using SOL#   101 VEC#  1 compute 3084
From                3052 using SOL#   104 VEC#  1 compute 3145
From                3335 using SOL#    90 VEC#  1 compute 3402
From                3402 using SOL#   106 VEC#  1 compute DOP5
From                DOP5 using SOL#   111 VEC#  1 compute P221
From                P221 using SOL#   108 VEC#  1 compute GETI
From                GETI using SOL#   114 VEC#  1 compute KUAL
From                3402 using SOL#   115 VEC#  1 compute 3405
```

CLOSURES

SOL#	V#	FROM	TO	DELTA X	DELTA Y	DELTA Z
1	1	3217	3146	0.000	0.000	0.000
2	1	3146	3217	0.017	0.037	0.006
3	1	3146	3217	0.057	-0.054	0.029
4	1	3146	3217	0.061	-0.054	0.000
5	1	3146	3217	0.012	-0.030	0.001
6	1	3146	3217	0.079	-0.091	0.008
7	1	3217	3146	-0.071	0.210	0.013
8	1	3217	3146	-0.059	0.139	0.030
9	1	3146	3217	0.086	-0.231	-0.026
10	1	3001	3146	0.000	0.000	0.000
11	1	3001	3146	0.040	0.095	0.028

12	1	3146	3001	-0.042	-0.098	-0.028
13	1	3001	3146	-0.029	0.207	0.052
14	1	3001	3146	-0.040	0.139	0.050
15	1	3001	3217	0.050	-0.006	0.027
16	1	3217	3001	-0.049	-0.031	-0.018
17	1	3217	3001	-0.063	-0.033	-0.016
18	1	3001	3217	0.052	-0.016	0.021
19	1	3217	3001	-0.005	0.012	0.000
20	1	3217	3001	-0.060	0.023	-0.008
21	1	3001	3217	0.040	-0.088	-0.009
22	1	3217	3001	-0.056	0.018	0.011
23	1	3217	3001	-0.045	0.065	0.004
24	1	3001	3405	-0.097	1.342	0.248
25	1	3405	3146	0.037	-1.297	-0.252
26	1	3146	3405	-0.220	1.161	0.264
27	1	3405	3146	0.067	-1.214	-0.176
28	1	3405	3001	0.063	-1.233	-0.207
29	1	3001	3405	-0.217	1.269	0.277
30	1	3001	3405	-0.050	1.372	0.219
31	1	3405	3001	0.082	-1.390	-0.272
32	1	3146	3405	-0.206	1.266	0.243
33	1	3405	3001	0.103	-1.380	-0.229
34	1	3405	3146	0.069	-1.299	-0.185
35	1	3146	3405	-0.177	1.341	0.203
36	1	3405	3146	0.060	-1.328	-0.203
37	1	3405	3001	0.084	-1.392	-0.242
38	1	3001	3405	-0.020	1.413	0.231
39	1	3146	3001	0.014	-0.027	-0.022
40	1	3146	3405	-0.065	1.240	0.156
41	1	3405	3146	0.158	-1.314	-0.187
42	1	3001	3146	-0.019	0.030	0.001

43	1	3146	3001	0.007	-0.045	-0.028
44	1	3146	3001	0.005	-0.061	-0.017
45	1	3405	3001	0.269	-1.400	-0.314
46	1	3427	3657	0.000	0.000	0.000
47	1	CHUL	3657	0.000	0.000	0.000
48	1	3427	3657	0.011	-0.010	0.000
49	1	CHUL	3427	-0.026	0.004	-0.024
50	1	CHUL	3427	-0.042	0.029	-0.011
51	1	CHUL	3427	-0.053	0.015	-0.018
52	1	CHUL	3657	-0.004	-0.005	-0.009
53	1	CHUL	3657	-0.058	0.032	0.003
54	1	3427	3657	-0.036	0.006	0.011
55	1	3300	3427	0.000	0.000	0.000
56	1	3477	3300	0.000	0.000	0.000
57	1	3159	3442	0.000	0.000	0.000
58	1	3159	3477	0.027	0.074	-0.026
59	1	3477	3427	0.012	0.001	0.001
60	1	3159	3427	0.039	0.076	-0.024
61	1	3442	3427	0.038	0.081	-0.012
62	1	3442	3300	0.031	0.082	-0.008
63	1	3109	3001	0.039	-0.085	-0.136
64	1	3239	3001	-0.038	-0.100	-0.091
65	1	3159	3109	0.000	0.000	0.000
66	1	3159	3001	0.052	-0.079	-0.128
67	1	3159	3477	0.044	0.060	-0.042
68	1	3239	3477	0.000	0.000	0.000
69	1	3109	3239	0.059	0.027	-0.050
70	1	3239	3217	0.000	0.000	0.000
71	1	3239	3656	-0.056	-0.028	0.079
72	1	3275	3656	0.000	0.000	0.000

73	1	3656	3217	0.056	0.039	-0.079
74	1	3109	3217	0.062	0.020	-0.038
75	1	3275	3217	0.043	0.060	-0.068
76	1	3109	3239	0.061	0.031	-0.039
77	1	3275	3109	0.000	0.000	0.000
78	1	3093	3052	0.000	0.000	0.000
79	1	3109	3159	-0.009	-0.009	-0.007
80	1	3084	3093	0.006	0.009	-0.019
81	1	3442	3052	-0.035	0.017	0.000
82	1	3442	3159	-0.025	-0.028	-0.004
83	1	3442	3052	-0.005	0.012	-0.004
84	1	3159	3052	0.006	0.014	-0.028
85	1	3159	3052	-0.026	0.041	-0.040
86	1	3300	3315	-0.006	-0.020	-0.035
87	1	3442	3335	0.000	0.000	0.000
88	1	3442	3300	0.031	0.089	0.008
89	1	3657	3315	0.000	0.000	0.000
90	1	3402	3335	0.000	0.000	0.000
91	1	3402	3657	-0.004	-0.010	-0.021
92	1	3335	3315	0.000	0.000	0.000
93	1	3657	3335	-0.001	0.007	0.016
94	1	3335	3315	-0.010	0.003	-0.016
95	1	3442	3315	0.013	0.005	-0.020
96	1	3300	3335	0.006	-0.046	-0.004
97	1	3402	3657	0.020	-0.012	-0.014
98	1	3477	3001	-0.015	-0.118	-0.070
99	1	3093	3159	-0.011	-0.011	-0.003
100	1	3084	3093	0.000	0.021	-0.005
101	1	3084	3052	0.000	0.000	0.000
102	1	3093	3109	0.000	0.000	0.000
103	1	3145	3146	-0.025	-0.011	-0.092

104	1	3145	3052	0.000	0.000	0.000
105	1	DOP5	3657	0.152	-0.921	-0.136
106	1	3402	DOP5	0.000	0.000	0.000
107	1	GETI	3402	-0.049	0.010	0.009
108	1	P221	GETI	0.000	0.000	0.000
109	1	3402	3657	0.162	-0.932	-0.155
110	1	P221	3402	-0.025	0.072	0.027
111	1	DOP5	P221	0.000	0.000	0.000
112	1	GETI	DOP5	-0.007	-0.003	-0.005
113	1	KUAL	P221	-0.056	0.014	0.020
114	1	KUAL	GETI	0.000	0.000	0.000
115	1	3402	3405	0.000	0.000	0.000

Redundant Vector of High Accuracy GPS Network

From	To	Solution	File	Delta X	Delta Y	Delta Z
3001	3146	10	00003284.WAV	+0.0000	+0.0000	+0.0000
		11	00003288.WAV	-0.0402	-0.0947	-0.0278
		12	00003292.WAV	-0.0419	-0.0976	-0.0283
		13	00003296.WAV	+0.0287	-0.2070	-0.0523
		14	00003300.WAV	+0.0398	-0.1392	-0.0497
		39	00003424.WAV	+0.0141	-0.0267	-0.0220
		42	00003412.WAV	+0.0190	-0.0298	-0.0009
		43	00003416.WAV	+0.0066	-0.0450	-0.0281
		44	00003420.WAV	+0.0053	-0.0606	-0.0165
3001	3217	15	00003304.WAV	+0.0000	+0.0000	+0.0000
		16	00003308.WAV	+0.0014	-0.0366	+0.0088
		17	00003312.WAV	-0.0122	-0.0394	+0.0112
		18	00003316.WAV	-0.0013	+0.0104	+0.0065
		19	00003320.WAV	+0.0459	+0.0057	+0.0267
		20	00003324.WAV	-0.0095	+0.0170	+0.0195
		21	00003328.WAV	+0.0107	+0.0825	+0.0366
		22	00003332.WAV	-0.0056	+0.0118	+0.0378
		23	00003336.WAV	+0.0055	+0.0594	+0.0310
3001	3405	24	00003340.WAV	+0.0000	+0.0000	+0.0000
		28	00003356.WAV	-0.0334	+0.1091	+0.0406
		29	00003360.WAV	+0.1202	+0.0731	-0.0289
		30	00003364.WAV	-0.0468	-0.0302	+0.0287
		31	00003368.WAV	-0.0149	-0.0476	-0.0247
		33	00003376.WAV	+0.0064	-0.0380	+0.0185
		37	00003392.WAV	-0.0124	-0.0500	+0.0060
		38	00003396.WAV	-0.0768	-0.0710	+0.0168
		45	00003428.WAV	+0.1724	-0.0580	-0.0662
3052	3159	84	00003540.WAV	+0.0000	+0.0000	+0.0000
		85	00003543.WAV	-0.0319	+0.0273	-0.0124
3052	3442	81	00003531.WAV	+0.0000	+0.0000	+0.0000
		83	00003537.WAV	+0.0297	-0.0048	-0.0039
3084	3093	80	00003528.WAV	+0.0000	+0.0000	+0.0000
		99	00003588.WAV	+0.0066	-0.0123	-0.0143
3109	3159	65	00003483.WAV	+0.0000	+0.0000	+0.0000
		79	00003525.WAV	+0.0089	+0.0089	+0.0069
3109	3239	69	00003495.WAV	+0.0000	+0.0000	+0.0000
		76	00003516.WAV	-0.0026	-0.0036	-0.0105
3146	3217	1	00003248.WAV	+0.0000	+0.0000	+0.0000
		2	00003252.WAV	-0.0168	-0.0365	-0.0064
		3	00003256.WAV	-0.0573	+0.0537	-0.0289
		4	00003260.WAV	-0.0608	+0.0541	+0.0000
		5	00003264.WAV	-0.0121	+0.0303	-0.0011
		6	00003268.WAV	-0.0793	+0.0905	-0.0077
		7	00003272.WAV	-0.0710	+0.2096	+0.0134
		8	00003276.WAV	-0.0591	+0.1391	+0.0299
		9	00003280.WAV	-0.0859	+0.2307	+0.0258
3146	3405	25	00003344.WAV	+0.0000	+0.0000	+0.0000
		26	00003348.WAV	+0.1834	+0.1366	-0.0115

		27	00003352.WAV	+0.0303	+0.0835	+0.0760
		32	00003372.WAV	+0.1693	+0.0310	+0.0091
		34	00003380.WAV	+0.0321	-0.0011	+0.0671
		35	00003384.WAV	+0.1403	-0.0437	+0.0495
		36	00003388.WAV	+0.0231	-0.0304	+0.0491
		40	00003404.WAV	+0.0278	+0.0572	+0.0964
		41	00003408.WAV	+0.1214	-0.0163	+0.0649
3159	3442	57	00003459.WAV	+0.0000	+0.0000	+0.0000
		82	00003534.WAV	-0.0254	-0.0276	-0.0043
3159	3477	58	00003462.WAV	+0.0000	+0.0000	+0.0000
		67	00003489.WAV	-0.0167	+0.0145	+0.0162
3300	3442	62	00003474.WAV	+0.0000	+0.0000	+0.0000
		88	00003552.WAV	-0.0009	+0.0070	+0.0165
3315	3335	92	00003564.WAV	+0.0000	+0.0000	+0.0000
		94	00003570.WAV	-0.0096	+0.0031	-0.0156
3402	3657	90	00004713.WAV	+0.0000	+0.0000	+0.0000
		105	00004719.WAV	-0.0241	+0.0019	-0.0069
		106	00004722.WAV	+0.0146	+0.0041	+0.0233
3427	3657	46	00003432.WAV	+0.0000	+0.0000	+0.0000
		48	00003437.WAV	-0.0111	+0.0096	-0.0005
		54	00003450.WAV	+0.0358	-0.0061	-0.0112
3427	CHUL	49	00003440.WAV	+0.0000	+0.0000	+0.0000
		50	00003442.WAV	-0.0161	+0.0257	+0.0137
		51	00003444.WAV	-0.0273	+0.0111	+0.0060
3657	CHUL	47	00003435.WAV	+0.0000	+0.0000	+0.0000
		52	00003446.WAV	-0.0044	-0.0053	-0.0085
		53	00003448.WAV	-0.0582	+0.0324	+0.0025

Global Network Closure

COORDINATE COMPUTATION SEQUENCE

Begin computations at point 3001

```
From                3001 using SOL#    10 VEC#  1 compute 3146
From                3146 using SOL#     1 VEC#  1 compute 3217
From                3217 using SOL#    70 VEC#  1 compute 3239
From                3239 using SOL#    68 VEC#  1 compute 3477
From                3477 using SOL#    56 VEC#  1 compute 3300
From                3300 using SOL#    55 VEC#  1 compute 3427
From                3427 using SOL#    46 VEC#  1 compute 3657
From                3657 using SOL#    47 VEC#  1 compute CHUL
From                3657 using SOL#    89 VEC#  1 compute 3315
From                3315 using SOL#    92 VEC#  1 compute 3335
From                3335 using SOL#    87 VEC#  1 compute 3442
From                3442 using SOL#    57 VEC#  1 compute 3159
From                3159 using SOL#    65 VEC#  1 compute 3109
From                3109 using SOL#    77 VEC#  1 compute 3275
From                3275 using SOL#    72 VEC#  1 compute 3656
From                3109 using SOL#   101 VEC#  1 compute 3093
From                3093 using SOL#    78 VEC#  1 compute 3052
From                3052 using SOL#   100 VEC#  1 compute 3084
From                3052 using SOL#   103 VEC#  1 compute 3145
From                3335 using SOL#    91 VEC#  1 compute 3402
From                3402 using SOL#   108 VEC#  1 compute GETI
From                GETI using SOL#   107 VEC#  1 compute P221
From                P221 using SOL#   110 VEC#  1 compute DOP5
From                P221 using SOL#   112 VEC#  1 compute KUAL
From                3402 using SOL#   114 VEC#  1 compute 3405
```

CLOSURES

SOL#	V#	FROM	TO	DELTA X	DELTA Y	DELTA Z
1	1	3217	3146	0.000	0.000	0.000
2	1	3146	3217	0.017	0.037	0.006
3	1	3146	3217	0.057	-0.054	0.029
4	1	3146	3217	0.061	-0.054	0.000
5	1	3146	3217	0.012	-0.030	0.001
6	1	3146	3217	0.079	-0.091	0.008
7	1	3217	3146	-0.071	0.210	0.013
8	1	3217	3146	-0.059	0.139	0.030
9	1	3146	3217	0.086	-0.231	-0.026
10	1	3001	3146	0.000	0.000	0.000
11	1	3001	3146	0.040	0.095	0.028
12	1	3146	3001	-0.042	-0.098	-0.028

13	1	3001	3146	-0.029	0.207	0.052
14	1	3001	3146	-0.040	0.139	0.050
15	1	3001	3217	0.050	-0.006	0.027
16	1	3217	3001	-0.049	-0.031	-0.018
17	1	3217	3001	-0.063	-0.033	-0.016
18	1	3001	3217	0.052	-0.016	0.021
19	1	3217	3001	-0.005	0.012	0.000
20	1	3217	3001	-0.060	0.023	-0.008
21	1	3001	3217	0.040	-0.088	-0.009
22	1	3217	3001	-0.056	0.018	0.011
23	1	3217	3001	-0.045	0.065	0.004
24	1	3001	3405	0.028	-0.106	0.147
25	1	3405	3146	-0.088	0.151	-0.151
26	1	3146	3405	-0.095	-0.287	0.163
27	1	3405	3146	-0.058	0.234	-0.075
28	1	3405	3001	-0.062	0.215	-0.106
29	1	3001	3405	-0.092	-0.179	0.176
30	1	3001	3405	0.075	-0.076	0.118
31	1	3405	3001	-0.043	0.058	-0.171
32	1	3146	3405	-0.081	-0.182	0.142
33	1	3405	3001	-0.022	0.068	-0.128
34	1	3405	3146	-0.056	0.149	-0.084
35	1	3146	3405	-0.052	-0.107	0.102
36	1	3405	3146	-0.065	0.120	-0.102
37	1	3405	3001	-0.041	0.056	-0.141
38	1	3001	3405	0.105	-0.035	0.130
39	1	3146	3001	0.014	-0.027	-0.022
40	1	3146	3405	0.060	-0.208	0.055
41	1	3405	3146	0.033	0.134	-0.086
42	1	3001	3146	-0.019	0.030	0.001
43	1	3146	3001	0.007	-0.045	-0.028

44	1	3146	3001	0.005	-0.061	-0.017
45	1	3405	3001	0.144	0.048	-0.213
46	1	3427	3657	0.000	0.000	0.000
47	1	CHUL	3657	0.000	0.000	0.000
48	1	3427	3657	0.011	-0.010	0.000
49	1	CHUL	3427	-0.026	0.004	-0.024
50	1	CHUL	3427	-0.042	0.029	-0.011
51	1	CHUL	3427	-0.053	0.015	-0.018
52	1	CHUL	3657	-0.004	-0.005	-0.009
53	1	CHUL	3657	-0.058	0.032	0.003
54	1	3427	3657	-0.036	0.006	0.011
55	1	3300	3427	0.000	0.000	0.000
56	1	3477	3300	0.000	0.000	0.000
57	1	3159	3442	0.000	0.000	0.000
58	1	3159	3477	0.027	0.074	-0.026
59	1	3477	3427	0.012	0.001	0.001
60	1	3159	3427	0.039	0.076	-0.024
61	1	3442	3427	0.038	0.081	-0.012
62	1	3442	3300	0.031	0.082	-0.008
63	1	3109	3001	0.039	-0.085	-0.136
64	1	3239	3001	-0.038	-0.100	-0.091
65	1	3159	3109	0.000	0.000	0.000
66	1	3159	3001	0.052	-0.079	-0.128
67	1	3159	3477	0.044	0.060	-0.042
68	1	3239	3477	0.000	0.000	0.000
69	1	3109	3239	0.059	0.027	-0.050
70	1	3239	3217	0.000	0.000	0.000
71	1	3239	3656	-0.056	-0.028	0.079
72	1	3275	3656	0.000	0.000	0.000
73	1	3656	3217	0.056	0.039	-0.079

74	1	3109	3217	0.062	0.020	-0.038
75	1	3275	3217	0.043	0.060	-0.068
76	1	3109	3239	0.061	0.031	-0.039
77	1	3275	3109	0.000	0.000	0.000
78	1	3093	3052	0.000	0.000	0.000
79	1	3109	3159	-0.009	-0.009	-0.007
80	1	3084	3093	0.006	0.009	-0.019
81	1	3442	3052	-0.035	0.017	0.000
82	1	3442	3159	-0.025	-0.028	-0.004
83	1	3442	3052	-0.005	0.012	-0.004
84	1	3159	3052	0.006	0.014	-0.028
85	1	3159	3052	-0.026	0.041	-0.040
86	1	3300	3315	-0.006	-0.020	-0.035
87	1	3442	3335	0.000	0.000	0.000
88	1	3442	3300	0.031	0.089	0.008
89	1	3657	3315	0.000	0.000	0.000
90	1	3402	3657	-0.004	-0.009	-0.021
91	1	3335	3402	0.000	0.000	0.000
92	1	3335	3315	0.000	0.000	0.000
93	1	3657	3335	-0.001	0.007	0.016
94	1	3335	3315	-0.010	0.003	-0.016
95	1	3442	3315	0.013	0.005	-0.020
96	1	3300	3335	0.006	-0.046	-0.004
97	1	3477	3001	-0.015	-0.118	-0.070
98	1	3093	3159	-0.011	-0.011	-0.003
99	1	3084	3093	0.000	0.021	-0.005
100	1	3084	3052	0.000	0.000	0.000
101	1	3093	3109	0.000	0.000	0.000
102	1	3145	3146	-0.025	-0.011	-0.092
103	1	3145	3052	0.000	0.000	0.000
104	1	DOP5	3657	0.021	-0.013	-0.034

105	1	3402	3657	0.020	-0.011	-0.014
106	1	3402	3657	-0.019	-0.013	-0.044
107	1	P221	GETI	0.000	0.000	0.000
108	1	GETI	3402	0.000	0.000	0.000
109	1	3402	DOP5	-0.049	0.010	0.009
110	1	DOP5	P221	0.000	0.000	0.000
111	1	GETI	DOP5	-0.007	-0.003	-0.005
112	1	KUAL	P221	0.000	0.000	0.000
113	1	KUAL	GETI	0.056	-0.014	-0.020
114	1	3402	3405	0.000	0.000	0.000
115	1	P221	3402	0.024	0.062	0.018

ภาคผนวก ค -2

ผลการปรับแก้ แบบ minimally constrained adjustment โครงข่ายงานวิจัย

COORDINATE ADJUSTMENT SUMMARY
NETWORK = High Accuracy GPS Network
TIME = Mon Aug 14 11:22:10 2000

Datum = WGS-84
Coordinate System = Geographic
Zone = Global

Network Adjustment Constraints:
1 fixed coordinates in y
1 fixed coordinates in x
1 fixed coordinates in H

POINT	NAME	OLD COORDS	ADJUST	NEW COORDS	1.96σ
1	3001				
	LAT=	15° 23' 01.539640"	+0.000013"	15° 23' 01.539653"	0.008408m
	LON=	100° 00' 47.541318"	-0.000103"	100° 00' 47.541215"	0.014863m
	ELL HT=	107.7047m	-0.0016m	107.7032m	0.036706m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
2	3052				
	LAT=	14° 54' 04.065354"	+0.000022"	14° 54' 04.065376"	0.007309m
	LON=	104° 24' 57.385030"	+0.000033"	104° 24' 57.385063"	0.011630m
	ELL HT=	115.0679m	+0.0029m	115.0708m	0.020959m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
3	3084				
	LAT=	17° 37' 56.596180"	+0.000071"	17° 37' 56.596251"	0.010085m
	LON=	104° 28' 56.305557"	+0.000010"	104° 28' 56.305567"	0.015177m
	ELL HT=	120.5659m	-0.0013m	120.5646m	0.030820m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
4	3093				
	LAT=	17° 21' 31.562405"	+0.000045"	17° 21' 31.562449"	0.008266m
	LON=	103° 06' 17.708107"	+0.000009"	103° 06' 17.708117"	0.013409m
	ELL HT=	140.2458m	+0.0008m	140.2465m	0.029132m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
5	3109				
	LAT=	17° 16' 48.107995"	+0.000031"	17° 16' 48.108026"	0.007259m
	LON=	101° 08' 43.770096"	-0.000026"	101° 08' 43.770070"	0.009805m
	ELL HT=	321.6128m	-0.0011m	321.6117m	0.013248m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
6	3145				
	LAT=	15° 11' 48.919630"	+0.000031"	15° 11' 48.919661"	0.028004m
	LON=	104° 15' 43.961778"	-0.000075"	104° 15' 43.961703"	0.026333m
	ELL HT=	110.9798m	-0.0015m	110.9783m	0.077220m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
7	3146				
	LAT=	15° 21' 00.899317"	+0.000029"	15° 21' 00.899346"	0.009553m
	LON=	104° 09' 20.643441"	-0.000149"	104° 09' 20.643292"	0.015955m
	ELL HT=	100.6146m	-0.0040m	100.6106m	0.037917m
	ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN

```
 8 3159
       LAT=  15° 51' 12.940820" -0.000005"  15° 51' 12.940815"    0.005582m
       LON= 102° 04' 01.544160" -0.000029" 102° 04' 01.544131"    0.007318m
    ELL HT=           158.7222m   -0.0012m           158.7209m    0.010174m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

 9 3217
       LAT=  18° 20' 07.228597" +0.000020"  18° 20' 07.228617"    0.009135m
       LON=  99° 22' 16.356351" -0.000133"  99° 22' 16.356217"    0.015403m
    ELL HT=           240.1680m   -0.0018m           240.1662m    0.037160m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

10 3239
       LAT=  16° 43' 16.549894" +0.000040"  16° 43' 16.549935"    0.008486m
       LON=  98° 35' 16.546706" -0.000031"  98° 35' 16.546675"    0.011478m
    ELL HT=           177.0714m   -0.0010m           177.0704m    0.015261m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

11 3275
       LAT=  20° 16' 28.849871" +0.000012"  20° 16' 28.849883"    0.011307m
       LON= 100° 05' 10.888584" -0.000091" 100° 05' 10.888493"    0.018802m
    ELL HT=           332.0051m   -0.0108m           331.9943m    0.044204m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

12 3300
       LAT=  12° 30' 59.350197" +0.000002"  12° 30' 59.350199"    0.006207m
       LON=  99° 58' 30.866806" -0.000026"  99° 58' 30.866779"    0.010842m
    ELL HT=           -27.3336m   +0.0036m           -27.3300m    0.019441m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

13 3315
       LAT=  10° 36' 34.344953" +0.000022"  10° 36' 34.344975"    0.006911m
       LON=  99° 04' 32.199300" -0.000038"  99° 04' 32.199262"    0.010507m
    ELL HT=            -4.4173m   +0.0004m            -4.4169m    0.015077m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

14 3335
       LAT=   9° 11' 08.128433" +0.000029"   9° 11' 08.128462"    0.006381m
       LON=  99° 50' 37.347043" -0.000036"  99° 50' 37.347007"    0.010231m
    ELL HT=           -19.2958m   +0.0009m           -19.2949m    0.014824m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

15 3402
       LAT=   6° 43' 57.191455" -0.000035"   6° 43' 57.191420"    0.007228m
       LON= 101° 05' 48.393493" -0.000052" 101° 05' 48.393441"    0.012806m
    ELL HT=            40.8082m   -0.0021m            40.8061m    0.018097m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

16 3405
       LAT=   6° 53' 22.919015" -0.000015"   6° 53' 22.919001"    0.010621m
       LON= 101° 14' 40.827046" -0.000144" 101° 14' 40.826902"    0.020095m
    ELL HT=           -10.4110m   +0.0013m           -10.4097m    0.039473m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

17 3427
       LAT=  13° 07' 13.910077" +0.000000"  13° 07' 13.910077"        FIXED
       LON= 101° 02' 40.954576" +0.000000" 101° 02' 40.954576"        FIXED
    ELL HT=            51.5182m   +0.0000m            51.5182m        FIXED
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
```

```
18 3442
       LAT=  12° 27' 24.793605" +0.000017"  12° 27' 24.793621"    0.005613m
       LON= 102° 15' 38.661185" +0.000019" 102° 15' 38.661204"    0.010411m
    ELL HT=           -17.4665m   +0.0028m           -17.4637m    0.019920m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

19 3477
       LAT=  14° 06' 05.581298" +0.000007"  14° 06' 05.581304"    0.006070m
       LON=  99° 25' 03.990747" +0.000010"  99° 25' 03.990757"    0.008980m
    ELL HT=             4.7128m   +0.0020m             4.7148m    0.016611m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

20 3656
       LAT=  19° 17' 18.031231" -0.000011"  19° 17' 18.031221"    0.011024m
       LON=  97° 57' 51.094041" -0.000068"  97° 57' 51.093973"    0.018031m
    ELL HT=           195.6969m   -0.0095m           195.6874m    0.042002m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

21 3657
       LAT=   7° 45' 32.648846" +0.000001"   7° 45' 32.648847"    0.004786m
       LON=  98° 18' 12.943795" -0.000028"  98° 18' 12.943767"    0.008505m
    ELL HT=            -1.7113m   -0.0001m            -1.7114m    0.011484m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

22 CHUL
       LAT=  13° 44' 07.612067" +0.000005"  13° 44' 07.612072"    0.004891m
       LON= 100° 31' 56.257806" -0.000056" 100° 31' 56.257751"    0.008055m
    ELL HT=           -13.9604m   -0.0040m           -13.9644m    0.012916m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

23 DOP5
       LAT=   6° 08' 22.990336" -0.000015"   6° 08' 22.990321"    0.008505m
       LON= 100° 23' 06.572810" -0.000045" 100° 23' 06.572766"    0.013401m
    ELL HT=           -10.0468m   -0.0005m           -10.0473m    0.016870m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

24 GETI
       LAT=   6° 13' 34.294948" -0.000017"   6° 13' 34.294930"    0.008957m
       LON= 102° 06' 19.664322" -0.000007" 102° 06' 19.664315"    0.014757m
    ELL HT=            -0.4225m   -0.0009m            -0.4234m    0.019831m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

25 KUAL
       LAT=   5° 19' 08.004175" +0.000002"   5° 19' 08.004176"    0.014202m
       LON= 103° 08' 20.921945" +0.000067" 103° 08' 20.922013"    0.044328m
    ELL HT=            55.0198m   +0.0016m            55.0213m    0.084458m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

26 P221
       LAT=   4° 59' 11.098181" -0.000033"   4° 59' 11.098148"    0.010052m
       LON= 102° 12' 12.892251" -0.000058" 102° 12' 12.892193"    0.015195m
    ELL HT=            95.7581m   -0.0007m            95.7574m    0.018466m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
```

ADJUSTMENT STATISTICS SUMMARY
NETWORK = High Accuracy GPS Network
TIME = Mon Aug 14 11:22:10 2000

ADJUSTMENT SUMMARY

Network Reference Factor = 1.01
Chi-Square Test (95%) = PASS
Degrees of Freedom = 270.00

GPS OBSERVATIONS
Reference Factor = 1.01
r = 270.00

GPS Solution	1	Reference Factor =	0.98	r =	2.97
GPS Solution	2	Reference Factor =	0.98	r =	2.97
GPS Solution	3	Reference Factor =	1.00	r =	2.91
GPS Solution	4	Reference Factor =	0.89	r =	2.16
GPS Solution	5	Reference Factor =	0.98	r =	2.95
GPS Solution	6	Reference Factor =	1.06	r =	2.78
GPS Solution	7	Reference Factor =	1.01	r =	2.98
GPS Solution	8	Reference Factor =	1.03	r =	2.96
GPS Solution	9	Reference Factor =	1.01	r =	2.98
GPS Solution	10	Reference Factor =	0.98	r =	2.95
GPS Solution	11	Reference Factor =	1.04	r =	2.81
GPS Solution	12	Reference Factor =	1.02	r =	2.81
GPS Solution	13	Reference Factor =	1.02	r =	2.97
GPS Solution	14	Reference Factor =	1.02	r =	2.97
GPS Solution	15	Reference Factor =	0.85	r =	1.90
GPS Solution	16	Reference Factor =	1.03	r =	2.96
GPS Solution	17	Reference Factor =	1.00	r =	2.97
GPS Solution	18	Reference Factor =	0.88	r =	2.13
GPS Solution	19	Reference Factor =	1.03	r =	2.98
GPS Solution	20	Reference Factor =	1.05	r =	2.80
GPS Solution	21	Reference Factor =	1.00	r =	2.99
GPS Solution	22	Reference Factor =	1.04	r =	2.97
GPS Solution	23	Reference Factor =	1.02	r =	2.93
GPS Solution	24	Reference Factor =	1.07	r =	2.91
GPS Solution	25	Reference Factor =	1.06	r =	2.91
GPS Solution	26	Reference Factor =	1.03	r =	2.99
GPS Solution	27	Reference Factor =	1.01	r =	2.98
GPS Solution	28	Reference Factor =	1.01	r =	2.98
GPS Solution	29	Reference Factor =	1.02	r =	2.99
GPS Solution	30	Reference Factor =	0.96	r =	2.84
GPS Solution	31	Reference Factor =	1.02	r =	2.88
GPS Solution	32	Reference Factor =	1.04	r =	2.94
GPS Solution	33	Reference Factor =	1.04	r =	2.41
GPS Solution	34	Reference Factor =	1.00	r =	2.94
GPS Solution	35	Reference Factor =	0.97	r =	2.93
GPS Solution	36	Reference Factor =	0.98	r =	2.81
GPS Solution	37	Reference Factor =	0.98	r =	1.56
GPS Solution	38	Reference Factor =	0.94	r =	2.89
GPS Solution	39	Reference Factor =	1.00	r =	2.84
GPS Solution	40	Reference Factor =	1.01	r =	2.94
GPS Solution	41	Reference Factor =	0.99	r =	2.95
GPS Solution	42	Reference Factor =	1.03	r =	2.91
GPS Solution	43	Reference Factor =	0.95	r =	2.65

```
GPS Solution   44 Reference Factor =    0.90   r =  2.15
GPS Solution   45 Reference Factor =    1.00   r =  2.99
GPS Solution   46 Reference Factor =    1.02   r =  2.10
GPS Solution   47 Reference Factor =    1.04   r =  2.88
GPS Solution   48 Reference Factor =    0.89   r =  1.89
GPS Solution   49 Reference Factor =    1.17   r =  2.54
GPS Solution   50 Reference Factor =    0.45   r =  1.25
GPS Solution   51 Reference Factor =    0.92   r =  2.58
GPS Solution   52 Reference Factor =    1.06   r =  2.77
GPS Solution   53 Reference Factor =    0.94   r =  2.63
GPS Solution   54 Reference Factor =    1.02   r =  2.86
GPS Solution   55 Reference Factor =    1.17   r =  2.50
GPS Solution   56 Reference Factor =    1.03   r =  2.73
GPS Solution   57 Reference Factor =    0.97   r =  2.68
GPS Solution   58 Reference Factor =    0.80   r =  1.86
GPS Solution   59 Reference Factor =    0.96   r =  1.74
GPS Solution   60 Reference Factor =    0.58   r =  1.06
GPS Solution   61 Reference Factor =    1.06   r =  2.21
GPS Solution   62 Reference Factor =    0.82   r =  1.33
GPS Solution   63 Reference Factor =    0.96   r =  2.58
GPS Solution   64 Reference Factor =    0.98   r =  2.73
GPS Solution   65 Reference Factor =    0.31   r =  1.02
GPS Solution   66 Reference Factor =    1.00   r =  2.55
GPS Solution   67 Reference Factor =    1.29   r =  2.35
GPS Solution   68 Reference Factor =    1.06   r =  2.63
GPS Solution   69 Reference Factor =    0.78   r =  1.17
GPS Solution   70 Reference Factor =    1.03   r =  2.78
GPS Solution   71 Reference Factor =    1.12   r =  2.64
GPS Solution   72 Reference Factor =    0.81   r =  0.76
GPS Solution   73 Reference Factor =    0.45   r =  0.86
GPS Solution   74 Reference Factor =    1.03   r =  2.90
GPS Solution   75 Reference Factor =    0.76   r =  1.65
GPS Solution   76 Reference Factor =    1.03   r =  2.09
GPS Solution   77 Reference Factor =    1.01   r =  2.64
GPS Solution   78 Reference Factor =    1.50   r =  1.27
GPS Solution   79 Reference Factor =    0.89   r =  2.49
GPS Solution   80 Reference Factor =    1.07   r =  2.34
GPS Solution   81 Reference Factor =    0.99   r =  2.74
GPS Solution   82 Reference Factor =    1.01   r =  2.64
GPS Solution   83 Reference Factor =    0.46   r =  0.70
GPS Solution   84 Reference Factor =    1.39   r =  2.60
GPS Solution   85 Reference Factor =    1.03   r =  2.96
GPS Solution   86 Reference Factor =    1.08   r =  2.91
GPS Solution   87 Reference Factor =    1.00   r =  2.87
GPS Solution   88 Reference Factor =    1.20   r =  2.59
GPS Solution   89 Reference Factor =    0.84   r =  1.25
GPS Solution   90 Reference Factor =    0.55   r =  1.28
GPS Solution   91 Reference Factor =    0.76   r =  2.50
GPS Solution   92 Reference Factor =    1.22   r =  2.78
GPS Solution   93 Reference Factor =    0.87   r =  1.66
GPS Solution   94 Reference Factor =    0.92   r =  1.10
GPS Solution   95 Reference Factor =    1.00   r =  2.55
GPS Solution   96 Reference Factor =    0.93   r =  1.11
GPS Solution   97 Reference Factor =    0.97   r =  1.38
GPS Solution   98 Reference Factor =    1.02   r =  1.97
GPS Solution   99 Reference Factor =    0.75   r =  0.77
GPS Solution  100 Reference Factor =    1.11   r =  2.67
GPS Solution  101 Reference Factor =    1.03   r =  2.08
GPS Solution  102 Reference Factor =    1.15   r =  1.05
GPS Solution  103 Reference Factor =    1.13   r =  1.68
GPS Solution  104 Reference Factor =    1.19   r =  0.90
```

```
GPS Solution  105 Reference Factor =    0.90   r =  2.79
GPS Solution  106 Reference Factor =    1.16   r =  2.88
GPS Solution  107 Reference Factor =    0.85   r =  1.37
GPS Solution  108 Reference Factor =    1.14   r =  1.48
GPS Solution  109 Reference Factor =    0.99   r =  2.29
GPS Solution  110 Reference Factor =    0.56   r =  0.64
GPS Solution  111 Reference Factor =    0.96   r =  1.93
GPS Solution  112 Reference Factor =    1.10   r =  1.61
GPS Solution  113 Reference Factor =    0.95   r =  1.29
GPS Solution  114 Reference Factor =    1.00   r =  2.90
GPS Solution  115 Reference Factor =    1.14   r =  2.85
```

WEIGHTING STRATEGIES:

GPS OBSERVATIONS:

Scalar Weighting Strategy:

Alternative Scalar Set Applied to Individual GPS Solutions:

```
Solution 1 = 45.89
Solution 2 = 32.56
Solution 3 = 18.57
Solution 4 = 5.05
Solution 5 = 31.77
Solution 6 = 19.88
Solution 7 = 53.57
Solution 8 = 16.56
Solution 9 = 50.85
Solution 10 = 12.42
Solution 11 = 10.08
Solution 12 = 11.35
Solution 13 = 47.63
Solution 14 = 24.65
Solution 15 = 1.43
Solution 16 = 17.64
Solution 17 = 15.81
Solution 18 = 2.28
Solution 19 = 36.69
Solution 20 = 7.01
Solution 21 = 26.51
Solution 22 = 21.06
Solution 23 = 20.41
Solution 24 = 15.93
Solution 25 = 19.86
Solution 26 = 58.40
Solution 27 = 46.40
Solution 28 = 32.40
Solution 29 = 22.59
Solution 30 = 21.89
Solution 31 = 26.30
Solution 32 = 23.69
Solution 33 = 6.14
Solution 34 = 26.76
Solution 35 = 16.44
Solution 36 = 12.32
Solution 37 = 3.06
Solution 38 = 16.60
Solution 39 = 14.06
Solution 40 = 31.10
Solution 41 = 20.63
Solution 42 = 20.55
Solution 43 = 9.50
```

```
Solution 44 = 4.92
Solution 45 = 34.68
Solution 46 = 2.39
Solution 47 = 10.42
Solution 48 = 1.84
Solution 49 = 5.59
Solution 50 = 1.74
Solution 51 = 5.25
Solution 52 = 7.93
Solution 53 = 6.08
Solution 54 = 10.19
Solution 55 = 8.02
Solution 56 = 9.58
Solution 57 = 4.14
Solution 58 = 1.87
Solution 59 = 2.50
Solution 60 = 1.06
Solution 61 = 3.53
Solution 62 = 1.55
Solution 63 = 19.00
Solution 64 = 20.77
Solution 65 = 0.40
Solution 66 = 8.06
Solution 67 = 3.72
Solution 68 = 7.67
Solution 69 = 0.21
Solution 70 = 20.51
Solution 71 = 18.50
Solution 72 = 3.02
Solution 73 = 3.74
Solution 74 = 39.77
Solution 75 = 6.18
Solution 76 = 1.93
Solution 77 = 19.59
Solution 78 = 3.31
Solution 79 = 4.33
Solution 80 = 5.70
Solution 81 = 3.78
Solution 82 = 3.87
Solution 83 = 0.03
Solution 84 = 8.11
Solution 85 = 21.27
Solution 86 = 20.19
Solution 87 = 8.35
Solution 88 = 4.70
Solution 89 = 0.79
Solution 90 = 1.23
Solution 91 = 3.77
Solution 92 = 8.55
Solution 93 = 2.42
Solution 94 = 0.52
Solution 95 = 4.38
Solution 96 = 2.13
Solution 97 = 4.36
Solution 98 = 6.32
Solution 99 = 1.00
Solution 100 = 11.94
Solution 101 = 6.76
Solution 102 = 44.58
Solution 103 = 40.06
Solution 104 = 1.98
```

```
      Solution 105 = 7.95
      Solution 106 = 12.66
      Solution 107 = 2.71
      Solution 108 = 2.64
      Solution 109 = 4.58
      Solution 110 = 0.74
      Solution 111 = 3.53
      Solution 112 = 12.20
      Solution 113 = 9.08
      Solution 114 = 13.61
      Solution 115 = 14.79

           No summation weighting strategy was used

           Station Error Strategy:
H.I. error = 0.0030
Tribrach error = 0.0030
```

ภาคผนวก ค -3

ผลการปรับแก้ แบบ fully constrained adjustment โครงข่ายงานวิจัย

COORDINATE ADJUSTMENT SUMMARY
NETWORK = High_Accuracy GPS Network
TIME = Mon Aug 14 12:32:37 2000

Datum = WGS-84
Coordinate System = Geographic
Zone = Global

Network Adjustment Constraints:
8 fixed coordinates in y
8 fixed coordinates in x
8 fixed coordinates in H

POINT	NAME		OLD COORDS	ADJUST	NEW COORDS	1.96σ
1	3001					
		LAT=	15° 23' 01.539621"	+0.000000"	15° 23' 01.539621"	FIXED
		LON=	100° 00' 47.542029"	+0.000000"	100° 00' 47.542029"	FIXED
		ELL HT=	107.7135m	+0.0000m	107.7135m	FIXED
		ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
2	3052					
		LAT=	14° 54' 04.065394"	+0.000000"	14° 54' 04.065394"	FIXED
		LON=	104° 24' 57.384931"	+0.000000"	104° 24' 57.384931"	FIXED
		ELL HT=	115.1309m	+0.0000m	115.1309m	FIXED
		ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
3	3084					
		LAT=	17° 37' 56.596571"	+0.000073"	17° 37' 56.596644"	0.010366m
		LON=	104° 28' 56.306012"	+0.000010"	104° 28' 56.306022"	0.018023m
		ELL HT=	120.6587m	-0.0049m	120.6538m	0.044449m
		ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
4	3093					
		LAT=	17°21' 31.562773"	+0.000060"	17° 21' 31.562833"	0.008488m
		LON=	103°06' 17.708374"	+0.000006"	103° 06' 17.708381"	0.016473m
		ELL HT=	140.3247m	-0.0016m	140.3231m	0.041782m
		ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
5	3109					
		LAT=	17° 16' 48.108355"	+0.000076"	17° 16' 48.108431"	0.006305m
		LON=	101° 08' 43.770742"	-0.000110"	101° 08' 43.770632"	0.012157m
		ELL HT=	321.6770m	+0.0066m	321.6836m	0.029841m
		ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
6	3145					
		LAT=	15° 11' 48.919497"	+0.000048"	15° 11' 48.919545"	0.008355m
		LON=	104° 15' 43.962456"	-0.000016"	104° 15' 43.962440"	0.008262m
		ELL HT=	111.0276m	-0.0048m	111.0228m	0.018312m
		ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN
7	3146					
		LAT=	15° 21' 00.899079"	+0.000053"	15° 21' 00.899132"	0.005741m
		LON=	104° 09' 20.644662"	-0.000056"	104° 09' 20.644606"	0.006893m
		ELL HT=	100.6531m	-0.0049m	100.6482m	0.017063m
		ORTHO HT=	0.0000m	+0.0000m	0.0000m	NOT KNOWN

```
 8 3159
       LAT=  15° 51' 12.940958" +0.000029"  15°  51' 12.940987"    0.004728m
       LON= 102° 04' 01.544485" -0.000032" 102°  04' 01.544453"    0.007758m
    ELL HT=           158.7685m   -0.0019m           158.7666m    0.013821m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

 9 3217
       LAT=  18° 20' 07.228869" +0.000000"  18°  20' 07.228869"        FIXED
       LON=  99° 22' 16.357763" +0.000000"  99°  22' 16.357763"        FIXED
    ELL HT=           240.2357m   +0.0000m           240.2357m        FIXED
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

10 3239
       LAT=  16° 43' 16.550285" +0.000097"  16°  43' 16.550382"    0.007412m
       LON=  98° 35' 16.547020" -0.000107"  98°  35' 16.546913"    0.013026m
    ELL HT=           177.1124m   +0.0093m           177.1218m    0.031616m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

11 3275
       LAT=  20° 16' 28.850402" -0.000028"  20°  16' 28.850374"    0.008324m
       LON= 100° 05' 10.889867" +0.000098" 100°  05' 10.889964"    0.017639m
    ELL HT=           332.1175m   -0.0126m           332.1049m    0.041520m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

12 3300
       LAT=  12° 30' 59.350082" -0.000028"  12°  30' 59.350054"    0.005459m
       LON=  99° 58' 30.866692" +0.000004"  99°  58' 30.866696"    0.009433m
    ELL HT=           -27.3602m   +0.0006m           -27.3596m    0.017063m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

13 3315
       LAT=  10° 36' 34.344628" +0.000000"  10°  36' 34.344628"        FIXED
       LON=  99° 04' 32.199318" +0.000000"  99°  04' 32.199318"        FIXED
    ELL HT=            -4.4900m   +0.0000m            -4.4900m        FIXED
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

14 3335
       LAT=   9° 11' 08.127914" +0.000010"   9°  11' 08.127924"    0.005290m
       LON=  99° 50' 37.346946" +0.000003"  99°  50' 37.346948"    0.008447m
    ELL HT=           -19.3842m   -0.0011m           -19.3852m    0.012881m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

15 3402
       LAT=   6° 43' 57.190767" -0.000011"   6°  43' 57.190756"    0.006502m
       LON= 101° 05' 48.392741" +0.000015" 101°  05' 48.392756"    0.016369m
    ELL HT=            40.7291m   -0.0045m            40.7247m    0.026980m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

16 3405
       LAT=   6° 53' 22.917584" +0.000000"   6°  53' 22.917584"        FIXED
       LON= 101° 14' 40.827555" +0.000000" 101°  14' 40.827555"        FIXED
    ELL HT=           -10.5602m   +0.0000m           -10.5602m        FIXED
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

17 3427
       LAT=  13°  07' 13.910077" +0.000000"  13°  07' 13.910077"        FIXED
       LON= 101°  02' 40.954576" +0.000000" 101°  02' 40.954576"        FIXED
    ELL HT=            51.5186m   +0.0000m            51.5186m        FIXED
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
```

```
18 3442
       LAT=  12° 27' 24.793365" +0.000009"  12°  27' 24.793374"    0.004429m
       LON= 102° 15' 38.661141" -0.000067" 102°  15' 38.661074"    0.008612m
    ELL HT=           -17.4651m   +0.0021m          -17.4630m    0.015785m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

19 3477
       LAT=  14° 06' 05.581346" +0.000037"  14°  06' 05.581383"    0.005929m
       LON=  99° 25' 03.990710" -0.000011"  99°  25' 03.990699"    0.010384m
    ELL HT=             4.7145m   +0.0030m            4.7175m    0.021782m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

20 3656
       LAT=  19° 17' 18.031718" -0.000075"  19°  17' 18.031643"    0.008374m
       LON=  97° 57' 51.095003" +0.000109"  97°  57' 51.095112"    0.017776m
    ELL HT=           195.7822m   -0.0112m          195.7711m    0.042154m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

21 3657
       LAT=   7° 45' 32.648241" +0.000000"   7°  45' 32.648241"         FIXED
       LON=  98° 18' 12.943076" +0.000000"  98°  18' 12.943076"         FIXED
    ELL HT=            -1.7841m   +0.0000m           -1.7841m         FIXED
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

22 CHUL
       LAT=  13° 44' 07.612138" +0.000023"  13°  44' 07.612161"    0.005170m
       LON= 100° 31' 56.257719" -0.000044" 100°  31' 56.257675"    0.010348m
    ELL HT=           -13.9416m   -0.0065m          -13.9481m    0.020541m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

23 DOP5
       LAT=   6° 08' 22.989542" +0.000000"   6°  08' 22.989542"    0.006280m
       LON= 100° 23' 06.572434" +0.000001" 100°  23' 06.572435"    0.008804m
    ELL HT=           -10.1312m   -0.0024m          -10.1336m    0.012837m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

24 GETI
       LAT=   6° 13' 34.294208" +0.000008"   6°  13' 34.294216"    0.007311m
       LON= 102° 06' 19.664283" +0.000027" 102°  06' 19.664310"    0.011284m
    ELL HT=            -0.4928m   -0.0039m           -0.4966m    0.019430m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

25 KUAL
       LAT=   5° 19' 08.003639" +0.000000"   5°  19' 08.003639"         FIXED
       LON= 103° 08' 20.922165" +0.000000" 103°  08' 20.922165"         FIXED
    ELL HT=           55.0154m   +0.0000m          55.0154m         FIXED
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN

26 P221
       LAT=   4° 59' 11.097156" +0.000011"   4°  59' 11.097167"    0.008549m
       LON= 102° 12' 12.892065" -0.000012" 102°  12' 12.892054"    0.011608m
    ELL HT=           95.6651m   -0.0031m          95.6620m    0.020297m
  ORTHO HT=             0.0000m   +0.0000m            0.0000m    NOT KNOWN
```

ADJUSTMENT STATISTICS SUMMARY
NETWORK = High Accuracy GPS Network
TIME = Mon Aug 14 12:32:37 2000

ADJUSTMENT SUMMARY

Network Reference Factor = 1.01
Chi-Square Test (95%) = PASS
Degrees of Freedom = 287.00

GPS OBSERVATIONS
Reference Factor = 1.01
r = 287.00

GPS Solution	1	Reference Factor =	0.95	r =	2.95
GPS Solution	2	Reference Factor =	0.99	r =	2.96
GPS Solution	3	Reference Factor =	1.04	r =	2.95
GPS Solution	4	Reference Factor =	1.14	r =	2.66
GPS Solution	5	Reference Factor =	0.90	r =	2.84
GPS Solution	6	Reference Factor =	1.08	r =	2.94
GPS Solution	7	Reference Factor =	1.03	r =	2.98
GPS Solution	8	Reference Factor =	1.03	r =	2.95
GPS Solution	9	Reference Factor =	1.01	r =	2.98
GPS Solution	10	Reference Factor =	0.99	r =	2.95
GPS Solution	11	Reference Factor =	0.98	r =	2.75
GPS Solution	12	Reference Factor =	0.99	r =	2.76
GPS Solution	13	Reference Factor =	1.01	r =	2.97
GPS Solution	14	Reference Factor =	1.01	r =	2.96
GPS Solution	15	Reference Factor =	1.08	r =	2.96
GPS Solution	16	Reference Factor =	1.02	r =	2.96
GPS Solution	17	Reference Factor =	1.00	r =	2.99
GPS Solution	18	Reference Factor =	1.05	r =	2.96
GPS Solution	19	Reference Factor =	1.03	r =	2.98
GPS Solution	20	Reference Factor =	1.04	r =	2.96
GPS Solution	21	Reference Factor =	1.01	r =	3.00
GPS Solution	22	Reference Factor =	1.03	r =	2.99
GPS Solution	23	Reference Factor =	1.02	r =	2.99
GPS Solution	24	Reference Factor =	1.01	r =	2.97
GPS Solution	25	Reference Factor =	1.08	r =	2.89
GPS Solution	26	Reference Factor =	1.01	r =	2.99
GPS Solution	27	Reference Factor =	0.97	r =	2.97
GPS Solution	28	Reference Factor =	0.97	r =	2.98
GPS Solution	29	Reference Factor =	1.00	r =	2.99
GPS Solution	30	Reference Factor =	1.00	r =	2.91
GPS Solution	31	Reference Factor =	1.03	r =	2.93
GPS Solution	32	Reference Factor =	1.02	r =	2.97
GPS Solution	33	Reference Factor =	1.07	r =	2.72
GPS Solution	34	Reference Factor =	0.96	r =	2.95
GPS Solution	35	Reference Factor =	1.01	r =	2.95
GPS Solution	36	Reference Factor =	0.96	r =	2.89
GPS Solution	37	Reference Factor =	1.12	r =	2.76
GPS Solution	38	Reference Factor =	1.03	r =	2.94
GPS Solution	39	Reference Factor =	1.01	r =	2.87
GPS Solution	40	Reference Factor =	0.95	r =	2.78
GPS Solution	41	Reference Factor =	0.97	r =	2.96
GPS Solution	42	Reference Factor =	1.04	r =	2.92
GPS Solution	43	Reference Factor =	0.96	r =	2.72

GPS Solution 44 Reference Factor = 0.98 r = 2.37
GPS Solution 45 Reference Factor = 1.02 r = 2.99
GPS Solution 46 Reference Factor = 0.82 r = 2.49
GPS Solution 47 Reference Factor = 1.03 r = 2.91
GPS Solution 48 Reference Factor = 0.84 r = 2.75
GPS Solution 49 Reference Factor = 1.13 r = 2.36
GPS Solution 50 Reference Factor = 0.69 r = 1.60
GPS Solution 51 Reference Factor = 0.86 r = 2.45
GPS Solution 52 Reference Factor = 1.04 r = 2.83
GPS Solution 53 Reference Factor = 1.04 r = 2.69
GPS Solution 54 Reference Factor = 1.00 r = 2.92
GPS Solution 55 Reference Factor = 1.04 r = 2.27
GPS Solution 56 Reference Factor = 0.91 r = 2.78
GPS Solution 57 Reference Factor = 1.08 r = 2.81
GPS Solution 58 Reference Factor = 0.91 r = 1.54
GPS Solution 59 Reference Factor = 0.97 r = 2.32
GPS Solution 60 Reference Factor = 1.23 r = 1.46
GPS Solution 61 Reference Factor = 1.11 r = 2.62
GPS Solution 62 Reference Factor = 1.11 r = 2.03
GPS Solution 63 Reference Factor = 0.99 r = 2.57
GPS Solution 64 Reference Factor = 0.80 r = 2.58
GPS Solution 65 Reference Factor = 0.78 r = 1.80
GPS Solution 66 Reference Factor = 1.02 r = 2.87
GPS Solution 67 Reference Factor = 1.25 r = 2.32
GPS Solution 68 Reference Factor = 0.93 r = 2.22
GPS Solution 69 Reference Factor = 0.91 r = 0.98
GPS Solution 70 Reference Factor = 1.12 r = 2.93
GPS Solution 71 Reference Factor = 1.25 r = 2.79
GPS Solution 72 Reference Factor = 0.68 r = 0.49
GPS Solution 73 Reference Factor = 0.65 r = 1.42
GPS Solution 74 Reference Factor = 1.08 r = 2.96
GPS Solution 75 Reference Factor = 0.70 r = 1.50
GPS Solution 76 Reference Factor = 0.87 r = 2.32
GPS Solution 77 Reference Factor = 1.13 r = 2.57
GPS Solution 78 Reference Factor = 1.19 r = 2.08
GPS Solution 79 Reference Factor = 0.85 r = 2.48
GPS Solution 80 Reference Factor = 1.07 r = 2.12
GPS Solution 81 Reference Factor = 0.94 r = 2.84
GPS Solution 82 Reference Factor = 1.02 r = 2.02
GPS Solution 83 Reference Factor = 0.90 r = 2.09
GPS Solution 84 Reference Factor = 0.96 r = 2.90
GPS Solution 85 Reference Factor = 0.97 r = 2.98
GPS Solution 86 Reference Factor = 1.10 r = 2.94
GPS Solution 87 Reference Factor = 0.93 r = 2.81
GPS Solution 88 Reference Factor = 1.21 r = 2.66
GPS Solution 89 Reference Factor = 1.00 r = 2.98
GPS Solution 90 Reference Factor = 0.94 r = 2.19
GPS Solution 91 Reference Factor = 0.95 r = 2.76
GPS Solution 92 Reference Factor = 1.14 r = 2.85
GPS Solution 93 Reference Factor = 0.99 r = 2.72
GPS Solution 94 Reference Factor = 0.74 r = 1.13
GPS Solution 95 Reference Factor = 0.83 r = 2.23
GPS Solution 96 Reference Factor = 0.96 r = 1.01
GPS Solution 97 Reference Factor = 1.14 r = 2.81
GPS Solution 98 Reference Factor = 0.99 r = 1.44
GPS Solution 99 Reference Factor = 0.89 r = 0.96
GPS Solution 100 Reference Factor = 1.09 r = 2.66
GPS Solution 101 Reference Factor = 0.93 r = 2.36
GPS Solution 102 Reference Factor = 1.19 r = 0.87
GPS Solution 103 Reference Factor = 1.34 r = 1.39
GPS Solution 104 Reference Factor = 0.31 r = 0.61

GPS Solution 105 Reference Factor = 0.98 r = 2.81
GPS Solution 106 Reference Factor = 1.12 r = 2.63
GPS Solution 107 Reference Factor = 0.70 r = 1.45
GPS Solution 108 Reference Factor = 1.08 r = 2.31
GPS Solution 109 Reference Factor = 1.00 r = 1.73
GPS Solution 110 Reference Factor = 0.55 r = 0.88
GPS Solution 111 Reference Factor = 0.62 r = 1.09
GPS Solution 112 Reference Factor = 1.00 r = 2.91
GPS Solution 113 Reference Factor = 1.03 r = 2.56
GPS Solution 114 Reference Factor = 1.00 r = 2.95
GPS Solution 115 Reference Factor = 1.03 r = 2.88

WEIGHTING STRATEGIES:

GPS OBSERVATIONS:
Scalar Weighting Strategy:
Alternative Scalar Set Applied to Individual GPS Solutions:
Solution 1 = 33.24
Solution 2 = 29.33
Solution 3 = 24.54
Solution 4 = 10.50
Solution 5 = 17.78
Solution 6 = 39.20
Solution 7 = 50.93
Solution 8 = 16.38
Solution 9 = 50.15
Solution 10 = 12.93
Solution 11 = 8.92
Solution 12 = 10.12
Solution 13 = 44.39
Solution 14 = 22.69
Solution 15 = 9.84
Solution 16 = 11.42
Solution 17 = 14.87
Solution 18 = 11.22
Solution 19 = 22.53
Solution 20 = 9.75
Solution 21 = 28.98
Solution 22 = 20.80
Solution 23 = 22.58
Solution 24 = 27.14
Solution 25 = 17.85
Solution 26 = 63.67
Solution 27 = 42.10
Solution 28 = 27.46
Solution 29 = 25.06
Solution 30 = 21.79
Solution 31 = 27.07
Solution 32 = 32.63
Solution 33 = 8.90
Solution 34 = 27.80
Solution 35 = 18.02
Solution 36 = 15.49
Solution 37 = 8.48
Solution 38 = 22.91
Solution 39 = 15.61
Solution 40 = 14.94
Solution 41 = 21.87
Solution 42 = 21.71
Solution 43 = 10.86

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Solution 44 = 6.45
Solution 45 = 36.04
Solution 46 = 3.11
Solution 47 = 12.71
Solution 48 = 4.84
Solution 49 = 5.81
Solution 50 = 3.80
Solution 51 = 5.75
Solution 52 = 10.72
Solution 53 = 7.69
Solution 54 = 11.90
Solution 55 = 4.97
Solution 56 = 11.02
Solution 57 = 5.00
Solution 58 = 1.83
Solution 59 = 4.90
Solution 60 = 1.91
Solution 61 = 4.31
Solution 62 = 2.97
Solution 63 = 15.32
Solution 64 = 13.85
Solution 65 = 5.16
Solution 66 = 9.33
Solution 67 = 4.19
Solution 68 = 6.19
Solution 69 = 0.45
Solution 70 = 32.57
Solution 71 = 28.15
Solution 72 = 3.23
Solution 73 = 9.70
Solution 74 = 55.91
Solution 75 = 8.68
Solution 76 = 3.30
Solution 77 = 19.17
Solution 78 = 7.50
Solution 79 = 8.30
Solution 80 = 4.97
Solution 81 = 5.47
Solution 82 = 1.74
Solution 83 = 1.55
Solution 84 = 14.40
Solution 85 = 23.12
Solution 86 = 20.21
Solution 87 = 6.47
Solution 88 = 5.91
Solution 89 = 7.03
Solution 90 = 4.02
Solution 91 = 7.90
Solution 92 = 10.81
Solution 93 = 14.66
Solution 94 = 1.43
Solution 95 = 1.93
Solution 96 = 1.62
Solution 97 = 11.99
Solution 98 = 6.63
Solution 99 = 2.08
Solution 100 = 15.17
Solution 101 = 12.13
Solution 102 = 6.96
Solution 103 = 8.01
Solution 104 = 0.67
```

```
     Solution 105 = 11.45
     Solution 106 = 9.89
     Solution 107 = 1.39
     Solution 108 = 5.90
     Solution 109 = 3.75
     Solution 110 = 0.16
     Solution 111 = 0.41
     Solution 112 = 23.52
     Solution 113 = 7.49
     Solution 114 = 12.53
     Solution 115 = 18.11

          No summation weighting strategy was used

          Station Error Strategy:
H.I. error = 0.0030
Tribrach error = 0.0030
```

SUMMARY OF COVARIANCES
NETWORK = High_Accura
TIME = Mon Aug 14 12:32:39 2000

Definition of precision (E x S)□ = C□ + P□:
Horizontal:
Precision (P) expressed as: ratio
Propagated linear error (E): U.S.
(standard error of adjusted horizontal distance)
Scalar (S) on propagated linear error: 1.0000
Constant error term (C): 0.0000
3-Dimensional:
Precision (P) expressed as: ratio
Propagated linear error (E): U.S.
(standard error of adjusted slope distance)
Scalar (S) on propagated linear error: 1.0000
Constant error term (C): 0.0000
Using orthometric height errors

FROM/ TO	AZIMUTH/ DELTA H	1.96σ 1.96σ	DISTANCE/ DELTA h	1.96σ 1.96σ	HOR PREC/ 3-D PREC
3001	-**-	-**-	-**-	-**-	-**-
3052	-**-	-**-	-**-	-**-	-**-
3001	61°50'02"	0.00"	538070.505m	0.0166m	1:63441288
3084	+12.9403m	0.0444m	-**-	-**-	1:63441288
3001	56°04'46"	0.01"	396045.106m	0.0145m	1:53640593
3093	+32.6096m	0.0418m	-**-	-**-	1:53640593
3001	29°48'34"	0.01"	242223.621m	0.0082m	1:57909370
3109	+213.9701m	0.0298m	-**-	-**-	1:57909370
3001	92°01'56"	0.00"	456820.714m	0.0082m	1:108961216
3145	+3.3093m	0.0183m	-**-	-**-	1:108961216
3001	89°55'42"	0.00"	444770.615m	0.0069m	1:126539015
3146	-7.0653m	0.0171m	-**-	-**-	1:126539015
3001	76°26'36"	0.00"	226300.152m	0.0076m	1:58263323
3159	+51.0531m	0.0138m	-**-	-**-	1:58263323
3001	-**-	-**-	-**-	-**-	-**-
3217	-**-	-**-	-**-	-**-	-**-
3001	314°20'09"	0.01"	212520.870m	0.0106m	1:39326871
3239	+69.4083m	0.0316m	-**-	-**-	1:39326871
3001	0°48'35"	0.01"	541377.586m	0.0083m	1:127284034
3275	+224.3914m	0.0415m	-**-	-**-	1:127284034

3001	180°44'44"	0.01"	317259.069m	0.0055m	1:113826391
3300	-135.0731m	0.0171m	-**-	-**-	1:113826391
3001	-**-	-**-	-**-	-**-	-**-
3315	-**-	-**-	-**-	-**-	-**-
3001	181°33'33"	0.00"	685923.554m	0.0053m	1:253859940
3335	-127.0987m	0.0129m	-**-	-**-	1:253859940
3001	172°50'10"	0.00"	964252.454m	0.0069m	1:275478037
3402	-66.9888m	0.0270m	-**-	-**-	1:275478037
3001	-**-	-**-	-**-	-**-	-**-
3405	-**-	-**-	-**-	-**-	-**-
3001	-**-	-**-	-**-	-**-	-**-
3427	-**-	-**-	-**-	-**-	-**-
3001	142°51'01"	0.00"	404777.422m	0.0062m	1:128853379
3442	-125.1765m	0.0158m	-**-	-**-	1:128853379
3001	204°23'44"	0.01"	155685.945m	0.0069m	1:44219699
3477	-102.9960m	0.0218m	-**-	-**-	1:44219699
3001	333°33'00"	0.01"	483891.286m	0.0107m	1:88240059
3656	+88.0576m	0.0422m	-**-	-**-	1:88240059
3001	-**-	-**-	-**-	-**-	-**-
3657	-**-	-**-	-**-	-**-	-**-
3001	162°52'54"	0.01"	190762.759m	0.0057m	1:65051337
CHUL	-121.6616m	0.0205m	-**-	-**-	1:65051337
3001	177°41'03"	0.00"	1023338.939m	0.0063m	1:319028238
DOP5	-117.8471m	0.0128m	-**-	-**-	1:319028238
3001	167°03'37"	0.00"	1038429.330m	0.0076m	1:268566681
GETI	-108.2101m	0.0194m	-**-	-**-	1:268566681
3001	-**-	-**-	-**-	-**-	-**-
KUAL	-**-	-**-	-**-	-**-	-**-
3001	168°00'00"	0.00"	1174774.128m	0.0087m	1:265700791
P221	-12.0515m	0.0203m	-**-	-**-	1:265700791
3052	1°20'07"	0.01"	302328.759m	0.0104m	1:57194809
3084	+5.5229m	0.0444m	-**-	-**-	1:57194809
3052	332°54'08"	0.01"	305982.431m	0.0108m	1:55486580
3093	+25.1922m	0.0418m	-**-	-**-	1:55486580

3052	307°24'02"	0.00"	437835.573m	0.0105m	1:82078858
3109	+206.5527m	0.0298m	-**-	-**-	1:82078858
3052	333°13'26"	0.05"	36666.553m	0.0080m	1: 8982469
3145	-4.1081m	0.0183m	-**-	-**-	1: 8982469
3052	330°39'46"	0.02"	57025.067m	0.0059m	1:18813575
3146	-14.4827m	0.0171m	-**-	-**-	1:18813575
3052	292°59'25"	0.00"	273304.501m	0.0074m	1:72079034
3159	+43.6357m	0.0138m	-**-	-**-	1:72079034
3052	-**-	-**-	-**-	-**-	-**-
3217	-**-	-**-	-**-	-**-	-**-
3052	288°39'28"	0.00"	656011.375m	0.0126m	1:102120816
3239	+61.9909m	0.0316m	-**-	-**-	1:102120816
3052	322°56'10"	0.00"	751465.004m	0.0125m	1:117375445
3275	+216.9740m	0.0415m	-**-	-**-	1:117375445
3052	241°45'46"	0.00"	547988.208m	0.0087m	1:123296227
3300	-142.4905m	0.0171m	-**-	-**-	1:123296227
3052	-**-	-**-	-**-	-**-	-**-
3315	-**-	-**-	-**-	-**-	-**-
3052	218°43'17"	0.00"	804601.551m	0.0067m	1:235459994
3335	-134.5161m	0.0129m	-**-	-**-	1:235459994
3052	202°13'14"	0.00"	973617.872m	0.0083m	1:230343226
3402	-74.4062m	0.0270m	-**-	-**-	1:230343226
3052	-**-	-**-	-**-	-**-	-**-
3405	-**-	-**-	-**-	-**-	-**-
3052	-**-	-**-	-**-	-**-	-**-
3427	-**-	-**-	-**-	-**-	-**-
3052	221°01'41"	0.00"	357042.499m	0.0066m	1:105754337
3442	-132.5939m	0.0158m	-**-	-**-	1:105754337
3052	261°18'26"	0.00"	545979.872m	0.0103m	1:104058461
3477	-110.4134m	0.0218m	-**-	-**-	1:104058461
3052	306°10'40"	0.00"	840790.036m	0.0152m	1:108266532
3656	+80.6402m	0.0422m	-**-	-**-	1:108266532

3052	-**-	-**-	-**-	-**-	-**-
3657	-**-	-**-	-**-	-**-	-**-
3052	253°22'38"	0.00"	438370.544m	0.0100m	1:85782198
CHUL	-129.0790m	0.0205m	-**-	-**-	1:85782198
3052	204°52'40"	0.00"	1064639.930m	0.0067m	1:309397330
DOP5	-125.2645m	0.0128m	-**-	-**-	1:309397330
3052	194°59'29"	0.00"	992257.785m	0.0076m	1:256333958
GETI	-115.6275m	0.0194m	-**-	-**-	1:256333958
3052	-**-	-**-	-**-	-**-	-**-
KUAL	-**-	-**-	-**-	-**-	-**-
3052	192°40'58"	0.00"	1123108.956m	0.0087m	1:251855515
P221	-19.4689m	0.0203m	-**-	-**-	1:251855515
3084	258°30'42"	0.01"	149382.565m	0.0081m	1:36153249
3093	+19.6693m	0.0157m	-**-	-**-	1:36153249
3084	264°13'26"	0.01"	356586.249m	0.0193m	1:36267433
3109	+201.0298m	0.0500m	-**-	-**-	1:36267433
3084	185°00'59"	0.02"	270539.439m	0.0131m	1:40390174
3145	-9.6310m	0.0468m	-**-	-**-	1:40390174
3084	187°54'27"	0.02"	254945.603m	0.0115m	1:43271016
3146	-20.0056m	0.0458m	-**-	-**-	1:43271016
3084	232°57'35"	0.01"	324140.643m	0.0151m	1:42133329
3159	+38.1128m	0.0436m	-**-	-**-	1:42133329
3084	278°57'46"	0.00"	546880.930m	0.0179m	1:59819070
3217	+119.5819m	0.0444m	-**-	-**-	1:59819070
3084	261°44'39"	0.00"	635099.423m	0.0201m	1:62002311
3239	+56.4680m	0.0523m	-**-	-**-	1:62002311
3084	302°58'51"	0.01"	547575.241m	0.0219m	1:49107261
3275	+211.4511m	0.0600m	-**-	-**-	1:49107261
3084	221°10'31"	0.00"	745017.111m	0.0157m	1:93229576
3300	-148.0134m	0.0472m	-**-	-**-	1:93229576
3084	217°37'06"	0.00"	971627.859m	0.0136m	1:140530087
3315	-125.1438m	0.0444m	-**-	-**-	1:140530087

3084	208°50'12"	0.00"	1060740.371m	0.0139m	1:149360548
3335	-140.0390m	0.0463m	-**-	-**-	1:149360548
3084	197°22'45"	0.00"	1260662.864m	0.0134m	1:184584982
3402	-79.9291m	0.0510m	-**-	-**-	1:184584982
3084	196°52'56"	0.00"	1239370.234m	0.0111m	1:219007983
3405	-131.2140m	0.0444m	-**-	-**-	1:219007983
3084	216°56'41"	0.01"	620779.641m	0.0135m	1:90386218
3427	-69.1352m	0.0444m	-**-	-**-	1:90386218
3084	202°56'28"	0.01"	620455.777m	0.0125m	1:97093863
3442	-138.1168m	0.0463m	-**-	-**-	1:97093863
3084	234°57'02"	0.00"	668404.837m	0.0170m	1:76920862
3477	-115.9363m	0.0485m	-**-	-**-	1:76920862
3084	285°55'29"	0.00"	712400.893m	0.0244m	1:57313802
3656	+75.1173m	0.0614m	-**-	-**-	1:57313802
3084	212°18'22"	0.00"	1281473.764m	0.0128m	1:195501592
3657	-122.4379m	0.0444m	-**-	-**-	1:195501592
3084	225°01'50"	0.01"	604289.428m	0.0165m	1:71739835
CHUL	-134.6019m	0.0487m	-**-	-**-	1:71739835
3084	199°48'31"	0.00"	1347177.440m	0.0131m	1:200902022
DOP5	-130.7874m	0.0455m	-**-	-**-	1:200902022
3084	191°51'47"	0.00"	1288003.418m	0.0129m	1:195620704
GETI	-121.1504m	0.0470m	-**-	-**-	1:195620704
3084	186°17'14"	0.00"	1369972.997m	0.0104m	1:257216084
KUAL	-65.6384m	0.0444m	-**-	-**-	1:257216084
3084	190°19'49"	0.00"	1420761.113m	0.0136m	1:204256854
P221	-24.9918m	0.0475m	-**-	-**-	1:204256854
3093	267°53'47"	0.01"	208475.852m	0.0179m	1:22840328
3109	+181.3605m	0.0476m	-**-	-**-	1:22840328
3093	152°29'38"	0.01"	269316.535m	0.0132m	1:39928896
3145	-29.3003m	0.0453m	-**-	-**-	1:39928896
3093	153°03'02"	0.01"	249010.882m	0.0118m	1:41263944
3146	-39.6749m	0.0447m	-**-	-**-	1:41263944

3093	213°46'02"	0.01"	200020.973m	0.0110m	1:35667862
3159	+18.4435m	0.0412m	-**-	-**-	1:35667862
3093	285°50'33"	0.00"	410239.744m	0.0161m	1:50054610
3217	+99.9126m	0.0418m	-**-	-**-	1:50054610
3093	262°19'13"	0.00"	486027.291m	0.0187m	1:51042076
3239	+36.7987m	0.0491m	-**-	-**-	1:51042076
3093	315°53'14"	0.01"	453189.047m	0.0184m	1:48405594
3275	+191.7818m	0.0582m	-**-	-**-	1:48405594
3093	21°233'49"	0.01"	632735.058m	0.0129m	1:95792646
3300	-167.6827m	0.0447m	-**-	-**-	1:95792646
3093	210°45'15"	0.00"	864213.979m	0.0110m	1:153608125
3315	-144.8131m	0.0418m	-**-	-**-	1:153608125
3093	201°44'40"	0.00"	970714.572m	0.0116m	1:164467537
3335	-159.7083m	0.0440m	-**-	-**-	1:164467537
3093	190°45'49"	0.00"	1195628.566m	0.0112m	1:208702734
3402	-99.5984m	0.0497m	-**-	-**-	1:208702734
3093	190°07'42"	0.00"	1175665.740m	0.0088m	1:262266430
3405	-150.8833m	0.0418m	-**-	-**-	1:262266430
3093	205°32'36"	0.01"	518544.727m	0.0103m	1:98331516
3427	-88.8045m	0.0418m	-**-	-**-	1:98331516
3093	189°37'07"	0.01"	549932.570m	0.0096m	1:112366643
3442	-157.7861m	0.0441m	-**-	-**-	1:112366643
3093	228°08'49"	0.01"	534807.705m	0.0147m	1:71482518
3477	-135.6056m	0.0454m	-**-	-**-	1:71482518
3093	292°15'00"	0.00"	583840.626m	0.0226m	1:50652994
3656	+55.4480m	0.0590m	-**-	-**-	1:50652994
3093	206°43'48"	0.00"	1182949.884m	0.0105m	1:221045412
3657	-142.1072m	0.0418m	-**-	-**-	1:221045412
3093	214°53'40"	0.01"	486700.988m	0.0135m	1:70529626
CHUL	-154.2712m	0.0462m	-**-	-**-	1:70529626
3093	193°44'11"	0.00"	1275883.833m	0.0112m	1:223302260

DOP5	-150.4566m	0.0439m	-**-	-**-	1:223302260
3093	185°09'55"	0.00"	1236319.220m	0.0113m	1:215253284
GETI	-140.8197m	0.0460m	-**-	-**-	1:215253284
3093	179°50'08"	0.00"	1331868.272m	0.0085m	1:307515129
KUAL	-85.3077m	0.0418m	-**-	-**-	1:307515129
3093	184°12'37"	0.00"	1372149.986m	0.0122m	1:220714995
P221	-44.6611m	0.0467m	-**-	-**-	1:220714995
3109	124°13'58"	0.01"	405144.938m	0.0131m	1:60548914
3145	-210.6608m	0.0350m	-**-	-**-	1:60548914
3109	123°08'52"	0.01"	386102.515m	0.0123m	1:61641623
3146	-221.0353m	0.0343m	-**-	-**-	1:61641623
3109	147°56'25"	0.01"	185990.955m	0.0075m	1:48607206
3159	-162.9170m	0.0282m	-**-	-**-	1:48607206
3109	302°06'21"	0.01"	221416.430m	0.0108m	1:40116920
3217	-81.4479m	0.0298m	-**-	-**-	1:40116920
3109	257°35'00"	0.00"	279272.234m	0.0071m	1:76734027
3239	-144.5618m	0.0126m	-**-	-**-	1:76734027
3109	341°33'03"	0.01"	349774.538m	0.0111m	1:61553943
3275	+10.4213m	0.0488m	-**-	-**-	1:61553943
3109	193°35'28"	0.01"	541900.349m	0.0086m	1:123685026
3300	-349.0432m	0.0338m	-**-	-**-	1:123685026
3109	197°07'16"	0.00"	771128.129m	0.0070m	1:215320040
3315	-326.1736m	0.0298m	-**-	-**-	1:215320040
3109	189°06'38"	0.00"	906546.491m	0.0086m	1:207159864
3335	-341.0688m	0.0329m	-**-	-**-	1:207159864
3109	180°15'57"	0.00"	1166828.849m	0.0092m	1:249942895
3402	-280.9589m	0.0406m	-**-	-**-	1:249942895
3109	179°27'02"	0.00"	1149488.589m	0.0063m	1:357319628
3405	-332.2438m	0.0298m	-**-	-**-	1:357319628
3109	181°21'41"	0.01"	460380.396m	0.0063m	1:142984685
3427	-270.1650m	0.0298m	-**-	-**-	1:142984685

3109	167°10'42"	0.01"	546990.845m	0.0077m	1:138670272
3442	-339.1466m	0.0330m	-**-	-**-	1:138670272
3109	208°00'32"	0.01"	397486.466m	0.0089m	1:87352537
3477	-316.9660m	0.0321m	-**-	-**-	1:87352537
3109	303°56'57"	0.01"	403161.725m	0.0179m	1:44268591
3656	-125.9125m	0.0497m	-**-	-**-	1:44268591
3109	196°40'29"	0.00"	1097534.837m	0.0070m	1:307939887
3657	-323.4677m	0.0298m	-**-	-**-	1:307939887
3109	189°36'21"	0.01"	397699.760m	0.0083m	1:94076319
CHUL	-335.6317m	0.0358m	-**-	-**-	1:94076319
3109	183°55'54"	0.00"	1235151.844m	0.0091m	1:266301485
DOP5	-331.8171m	0.0330m	-**-	-**-	1:266301485
3109	175°00'11"	0.00"	1227267.628m	0.0098m	1:245428062
GETI	-322.1802m	0.0361m	-**-	-**-	1:245428062
3109	170°26'39"	0.00"	1340860.320m	0.0065m	1:402474460
KUAL	-266.6682m	0.0298m	-**-	-**-	1:402474460
3109	175°01'46"	0.00"	1364797.236m	0.0108m	1:246600875
P221	-226.0216m	0.0370m	-**-	-**-	1:246600875
3145	326°01'46"	0.08"	20460.860m	0.0076m	1: 5274504
3146	-10.3746m	0.0148m	-**-	-**-	1: 5274504
3145	287°26'22"	0.01"	246452.465m	0.0109m	1:44254366
3159	+47.7438m	0.0218m	-**-	-**-	1:44254366
3145	304°21'07"	0.00"	626462.638m	0.0079m	1:155423616
3217	+129.2129m	0.0183m	-**-	-**-	1:155423616
3145	286°17'13"	0.00"	630412.003m	0.0151m	1:81877252
3239	+66.0990m	0.0388m	-**-	-**-	1:81877252
3145	322°22'27"	0.00"	715417.724m	0.0148m	1:94947170
3275	+221.0821m	0.0451m	-**-	-**-	1:94947170
3145	237°54'44"	0.00"	550142.723m	0.0122m	1:88357779
3300	-138.3824m	0.0249m	-**-	-**-	1:88357779
3145	228°34'10"	0.00"	757754.706m	0.0087m	1:170697064
3315	-115.5128m	0.0183m	-**-	-**-	1:170697064

3145	216°21'49"	0.00"	820483.751m	0.0108m	1:149575347
3335	-130.4081m	0.0215m	-**-	-**-	1:149575347
3145	200°36'16"	0.00"	998055.877m	0.0114m	1:171084993
3402	-70.2981m	0.0294m	-**-	-**-	1:171084993
3145	200°02'59"	0.00"	976177.196m	0.0086m	1:222389770
3405	-121.5830m	0.0183m	-**-	-**-	1:222389770
3145	236°55'22"	0.00"	416435.815m	0.0087m	1:94274162
3427	-59.5042m	0.0183m	-**-	-**-	1:94274162
3145	215°45'49"	0.01"	372443.224m	0.0105m	1:69241862
3442	-128.4858m	0.0228m	-**-	-**-	1:69241862
3145	257°32'46"	0.00"	535730.913m	0.0133m	1:78738005
3477	-106.3053m	0.0304m	-**-	-**-	1:78738005
3145	304°57'46"	0.00"	808304.185m	0.0173m	1:91430458
3656	+84.7482m	0.0471m	-**-	-**-	1:91430458
3145	218°57'18"	0.00"	1048306.509m	0.0087m	1:235900634
3657	-112.8069m	0.0183m	-**-	-**-	1:235900634
3145	248°34'05"	0.00"	433409.979m	0.0130m	1:65136263
CHUL	-124.9709m	0.0277m	-**-	-**-	1:65136263
3145	203°20'15"	0.00"	1087765.191m	0.0107m	1:199882911
DOP5	-121.1564m	0.0187m	-**-	-**-	1:199882911
3145	193°35'26"	0.00"	1019895.986m	0.0110m	1:181984281
GETI	-111.5194m	0.0210m	-**-	-**-	1:181984281
3145	186°32'00"	0.00"	1099516.183m	0.0084m	1:255161704
KUAL	-56.0074m	0.0183m	-**-	-**-	1:255161704
3145	191°29'44"	0.00"	1151652.068m	0.0117m	1:192484129
P221	-15.3608m	0.0215m	-**-	-**-	1:192484129
3146	284°14'35"	0.01"	230812.621m	0.0100m	1:45233938
3159	+58.1184m	0.0202m	-**-	-**-	1:45233938
3146	303°36'48"	0.00"	607495.660m	0.0065m	1:184193766
3217	+139.5875m	0.0171m	-**-	-**-	1:184193766
3146	285°02'37"	0.00"	614817.839m	0.0145m	1:82831772

3239	+76.4735m	0.0391m	-**-	-**-	1:82831772
3146	322°14'21"	0.00"	694999.698m	0.0138m	1:98770715
3275	+231.4567m	0.0444m	-**-	-**-	1:98770715
3146	235°45'29"	0.00"	549850.076m	0.0108m	1:99393916
3300	-128.0079m	0.0239m	-**-	-**-	1:99393916
3146	227°01'13"	0.00"	760680.745m	0.0065m	1:229724504
3315	-105.1382m	0.0171m	-**-	-**-	1:229724504
3146	215°00'32"	0.00"	827592.804m	0.0087m	1:186402082
3335	-120.0335m	0.0200m	-**-	-**-	1:186402082
3146	199°38'18"	0.00"	1010052.386m	0.0092m	1:215255958
3402	-59.9236m	0.0272m	-**-	-**-	1:215255958
3146	199°04'09"	0.00"	988335.716m	0.0059m	1:325750375
3405	-111.2084m	0.0171m	-**-	-**-	1:325750375
3146	234°05'02"	0.00"	416618.800m	0.0066m	1:123366188
3427	-49.1296m	0.0171m	-**-	-**-	1:123366188
3146	212°50'38"	0.01"	380014.898m	0.0083m	1:89687808
3442	-118.1112m	0.0212m	-**-	-**-	1:89687808
3146	255°27'33"	0.00"	528568.537m	0.0124m	1:83286067
3477	-95.9307m	0.0305m	-**-	-**-	1:83286067
3146	304°24'13"	0.00"	789244.918m	0.0168m	1:92000674
3656	+95.1228m	0.0471m	-**-	-**-	1:92000674
3146	217°52'25"	0.00"	1054494.197m	0.0063m	1:327700778
3657	-102.4323m	0.0171m	-**-	-**-	1:327700778
3146	245°52'42"	0.00"	429432.042m	0.0119m	1:70877639
CHUL	-114.5963m	0.0270m	-**-	-**-	1:70877639
3146	202°25'13"	0.00"	1098950.381m	0.0084m	1:255003022
DOP5	-110.7818m	0.0156m	-**-	-**-	1:255003022
3146	192°43'58"	0.00"	1033812.484m	0.0087m	1:232698351
GETI	-101.1449m	0.0169m	-**-	-**-	1:232698351
3146	185°49'45"	0.00"	1115152.314m	0.0058m	1:378258792
KUAL	-45.6328m	0.0171m	-**-	-**-	1:378258792

3146	190°45'32"	0.00"	1166092.229m	0.0096m	1:238664849
P221	-4.9862m	0.0173m	-**-	-**-	1:238664849
3159	314°08'12"	0.00"	397173.233m	0.0065m	1:119298388
3217	+81.4691m	0.0138m	-**-	-**-	1:119298388
3159	284°57'43"	0.00"	384041.254m	0.0120m	1:62816282
3239	+18.3551m	0.0310m	-**-	-**-	1:62816282
3159	337°06'12"	0.01"	532342.906m	0.0111m	1:94213325
3275	+173.3383m	0.0429m	-**-	-**-	1:94213325
3159	211°42'44"	0.01"	432778.556m	0.0084m	1:101504614
3300	-186.1263m	0.0210m	-**-	-**-	1:101504614
3159	209°33'21"	0.00"	664552.250m	0.0056m	1:234201226
3315	-163.2566m	0.0138m	-**-	-**-	1:234201226
3159	198°23'32"	0.00"	776191.731m	0.0076m	1:200030819
3335	-178.1519m	0.0190m	-**-	-**-	1:200030819
3159	186°05'45"	0.00"	1014494.141m	0.0081m	1:245712861
3402	-118.0420m	0.0297m	-**-	-**-	1:245712861
3159	185°15'34"	0.00"	995627.704m	0.0047m	1:411039246
3405	-169.3268m	0.0138m	-**-	-**-	1:411039246
3159	200°09'20"	0.00"	321852.091m	0.0051m	1:122839904
3427	-107.2480m	0.0138m	-**-	-**-	1:122839904
3159	176°47'31"	0.01"	376395.963m	0.0056m	1:130866798
3442	-176.2296m	0.0185m	-**-	-**-	1:130866798
3159	236°07'16"	0.00"	344643.011m	0.0081m	1:83712673
3477	-154.0491m	0.0205m	-**-	-**-	1:83712673
3159	311°43'01"	0.01"	578046.217m	0.0155m	1:72884158
3656	+37.0044m	0.0442m	-**-	-**-	1:72884158
3159	205°01'19"	0.00"	984737.543m	0.0053m	1:361152064
3657	-160.5507m	0.0138m	-**-	-**-	1:361152064
3159	215°22'57"	0.01"	286745.650m	0.0092m	1:60864162
CHUL	-172.7147m	0.0243m	-**-	-**-	1:60864162
3159	189°52'51"	0.00"	1090089.355m	0.0080m	1:266048184
DOP5	-168.9002m	0.0184m	-**-	-**-	1:266048184

3159	179°46'14"	0.00"	1064966.644m	0.0086m	1:241648510
GETI	-159.2633m	0.0227m	-**-	-**-	1:241648510
3159	174°08'37"	0.00"	1171165.892m	0.0048m	1:479697382
KUAL	-103.7512m	0.0138m	-**-	-**-	1:479697382
3159	179°16'27"	0.00"	1202151.634m	0.0098m	1:240977792
P221	-63.1046m	0.0237m	-**-	-**-	1:240977792
3217	205°05'06"	0.01"	197049.337m	0.0088m	1:44040707
3239	-63.1139m	0.0316m	-**-	-**-	1:44040707
3217	19°10'43"	0.02"	227452.321m	0.0100m	1:44745849
3275	+91.8692m	0.0415m	-**-	-**-	1:44745849
3217	174°10'02"	0.00"	647130.329m	0.0055m	1:231053123
3300	-267.5953m	0.0171m	-**-	-**-	1:231053123
3217	-**-	-**-	-**-	-**-	-**-
3315	-**-	-**-	-**-	-**-	-**-
3217	177°03'03"	0.00"	1013606.848m	0.0053m	1:375271827
3335	-259.6209m	0.0129m	-**-	-**-	1:375271827
3217	171°29'05"	0.00"	1297191.571m	0.0070m	1:364981051
3402	-199.5110m	0.0270m	-**-	-**-	1:364981051
3217	-**-	-**-	-**-	-**-	-**-
3405	-**-	-**-	-**-	-**-	-**-
3217	-**-	-**-	-**-	-**-	-**-
3427	-**-	-**-	-**-	-**-	-**-
3217	154°06'22"	0.00"	720573.572m	0.0053m	1:264259626
3442	-257.6987m	0.0158m	-**-	-**-	1:264259626
3217	179°23'04"	0.00"	468543.572m	0.0059m	1:154884196
3477	-235.5182m	0.0218m	-**-	-**-	1:154884196
3217	305°38'51"	0.01"	181999.139m	0.0151m	1:23627867
3656	-44.4646m	0.0422m	-**-	-**-	1:23627867
3217	-**-	-**-	-**-	-**-	-**-
3657	-**-	-**-	-**-	-**-	-**-
3217	166°07'03"	0.00"	523958.285m	0.0055m	1:185358933
CHUL	-254.1838m	0.0205m	-**-	-**-	1:185358933

3217	175°12'29"	0.00"	1353661.094m	0.0063m	1:420848160
DOP5	-250.3693m	0.0128m	-**-	-**-	1:420848160
3217	167°09'47"	0.00"	1372104.560m	0.0076m	1:355390449
GETI	-240.7323m	0.0194m	-**-	-**-	1:355390449
3217	-**-	-**-	-**-	-**-	-**-
KUAL	-**-	-**-	-**-	-**-	-**-
3217	167°52'14"	0.00"	1508502.348m	0.0087m	1:341231504
P221	-144.5737m	0.0203m	-**-	-**-	1:341231504
3239	21°40'57"	0.01"	423940.603m	0.0126m	1:65831488
3275	+154.9832m	0.0503m	-**-	-**-	1:65831488
3239	162°00'34"	0.01"	488647.338m	0.0096m	1:99375590
3300	-204.4814m	0.0355m	-**-	-**-	1:99375590
3239	175°28'43"	0.00"	678237.144m	0.0074m	1:178763446
3315	-181.6118m	0.0316m	-**-	-**-	1:178763446
3239	170°34'10"	0.00"	844726.448m	0.0094m	1:176883630
3335	-196.5070m	0.0351m	-**-	-**-	1:176883630
3239	165°49'22"	0.00"	1138227.559m	0.0112m	1:198632876
3402	-136.3971m	0.0442m	-**-	-**-	1:198632876
3239	164°47'59"	0.00"	1125375.474m	0.0079m	1:280825659
3405	-187.6820m	0.0316m	-**-	-**-	1:280825659
3239	146°06'47"	0.01"	478093.586m	0.0094m	1:99590532
3427	-125.6032m	0.0316m	-**-	-**-	1:99590532
3239	139°31'54"	0.00"	615759.348m	0.0115m	1:105245079
3442	-194.5848m	0.0355m	-**-	-**-	1:105245079
3239	162°48'22"	0.01"	303253.790m	0.0085m	1:70147057
3477	-172.4042m	0.0319m	-**-	-**-	1:70147057
3239	347°00'26"	0.01"	291701.451m	0.0111m	1:51671797
3656	+18.6493m	0.0497m	-**-	-**-	1:51671797
3239	181°49'10"	0.00"	991935.605m	0.0074m	1:261690512
3657	-178.9059m	0.0316m	-**-	-**-	1:261690512
3239	147°26'06"	0.01"	390868.071m	0.0115m	1:66668951
CHUL	-191.0698m	0.0372m	-**-	-**-	1:66668951

3239	170°17'43"	0.00"	1186804.103m	0.0102m	1:228053928
DOP5	-187.2553m	0.0367m	-**-	-**-	1:228053928
3239	161°19'33"	0.00"	1222580.080m	0.0116m	1:206342201
GETI	-177.6184m	0.0410m	-**-	-**-	1:206342201
3239	157°59'57"	0.00"	1355492.131m	0.0083m	1:318719215
KUAL	-122.1064m	0.0316m	-**-	-**-	1:318719215
3239	162°41'07"	0.00"	1356720.457m	0.0123m	1:215321851
P221	-81.4598m	0.0419m	-**-	-**-	1:215321851
3275	180°48'30"	0.00"	858636.529m	0.0099m	1:169437156
3300	-359.4646m	0.0447m	-**-	-**-	1:169437156
3275	185°56'02"	0.00"	1074970.677m	0.0085m	1:246692971
3315	-336.5949m	0.0415m	-**-	-**-	1:246692971
3275	181°15'10"	0.00"	1227275.175m	0.0100m	1:240532181
3335	-351.4902m	0.0437m	-**-	-**-	1:240532181
3275	175°41'44"	0.00"	1502259.814m	0.0107m	1:275173885
3402	-291.3803m	0.0494m	-**-	-**-	1:275173885
3275	175°00'47"	0.00"	1486183.028m	0.0084m	1:347597870
3405	-342.6651m	0.0415m	-**-	-**-	1:347597870
3275	172°30'03"	0.00"	798289.690m	0.0085m	1:184298552
3427	-280.5863m	0.0415m	-**-	-**-	1:184298552
3275	164°38'59"	0.00"	895734.911m	0.0102m	1:171410192
3442	-349.5679m	0.0443m	-**-	-**-	1:171410192
3275	186°02'43"	0.01"	686881.454m	0.0103m	1:130798571
3477	-327.3874m	0.0466m	-**-	-**-	1:130798571
3275	244°12'40"	0.01"	247738.259m	0.0107m	1:45346272
3656	-136.3339m	0.0252m	-**-	-**-	1:45346272
3275	188°09'04"	0.00"	1398034.279m	0.0087m	1:315126135
3657	-333.8890m	0.0415m	-**-	-**-	1:315126135
3275	176°10'43"	0.01"	725252.946m	0.0097m	1:146692252
CHUL	-346.0530m	0.0461m	-**-	-**-	1:146692252
3275	178°46'34"	0.00"	1564187.378m	0.0105m	1:291788364

DOP5	-342.2385m	0.0435m	-**-	-**-	1:291788364
3275	171°43'56"	0.00"	1569529.873m	0.0113m	1:271835861
GETI	-332.6016m	0.0457m	-**-	-**-	1:271835861
3275	168°17'49"	0.00"	1687283.205m	0.0088m	1:376411218
KUAL	-277.0895m	0.0415m	-**-	-**-	1:376411218
3275	171°59'53"	0.00"	1706855.436m	0.0122m	1:274509404
P221	-236.4429m	0.0462m	-**-	-**-	1:274509404
3300	205°02'19"	0.01"	232648.822m	0.0064m	1:70904194
3315	+22.8696m	0.0171m	-**-	-**-	1:70904194
3300	182°14'53"	0.01"	368723.896m	0.0063m	1:114176156
3335	+7.9744m	0.0151m	-**-	-**-	1:114176156
3300	169°00'33"	0.01"	651464.741m	0.0092m	1:138553796
3402	+68.0843m	0.0318m	-**-	-**-	1:138553796
3300	167°16'14"	0.00"	637746.773m	0.0057m	1:220486167
3405	+16.7994m	0.0171m	-**-	-**-	1:220486167
3300	59°57'34"	0.01"	133961.622m	0.0087m	1:30271021
3427	+78.8782m	0.0171m	-**-	-**-	1:30271021
3300	91°16'22"	0.00"	248528.095m	0.0108m	1:45258994
3442	+9.8966m	0.0209m	-**-	-**-	1:45258994
3300	341°03'28"	0.01"	185470.687m	0.0083m	1:43738557
3477	+32.0772m	0.0272m	-**-	-**-	1:43738557
3300	344°13'54"	0.01"	779653.240m	0.0108m	1:141017790
3656	+223.1307m	0.0454m	-**-	-**-	1:141017790
3300	199°20'57"	0.00"	557174.121m	0.0061m	1:179344398
3657	+25.5755m	0.0171m	-**-	-**-	1:179344398
3300	24°03'53"	0.02"	147763.974m	0.0090m	1:32275365
CHUL	+13.4116m	0.0265m	-**-	-**-	1:32275365
3300	176°18'41"	0.00"	706733.937m	0.0084m	1:164862100
DOP5	+17.2261m	0.0215m	-**-	-**-	1:164862100
3300	161°13'35"	0.00"	733990.300m	0.0099m	1:145134692
GETI	+26.8630m	0.0259m	-**-	-**-	1:145134692

3300	156°07'26"	0.00"	868702.922m	0.0062m	1:274136979
KUAL	+82.3750m	0.0171m	-**-	-**-	1:274136979
3300	163°24'44"	0.00"	868126.049m	0.0106m	1:159875582
P221	+123.0216m	0.0267m	-**-	-**-	1:159875582
3315	151°47'33"	0.01"	178610.947m	0.0061m	1:57503607
3335	-14.8952m	0.0129m	-**-	-**-	1:57503607
3315	152°25'20"	0.01"	483036.438m	0.0097m	1:97299305
3402	+45.2147m	0.0270m	-**-	-**-	1:97299305
3315	-**-	-**-	-**-	-**-	-**-
3405	-**-	-**-	-**-	-**-	-**-
3315	-**-	-**-	-**-	-**-	-**-
3427	-**-	-**-	-**-	-**-	-**-
3315	59°13'40"	0.00"	403076.855m	0.0078m	1:100801950
3442	-12.9730m	0.0158m	-**-	-**-	1:100801950
3315	5°28'00"	0.01"	388092.801m	0.0060m	1:126979485
3477	+9.2075m	0.0218m	-**-	-**-	1:126979485
3315	353°02'23"	0.00"	967707.046m	0.0085m	1:222988461
3656	+200.2611m	0.0422m	-**-	-**-	1:222988461
3315	-**-	-**-	-**-	-**-	-**-
3657	-**-	-**-	-**-	-**-	-**-
3315	24°28'47"	0.01"	380399.739m	0.0064m	1:115598544
CHUL	-9.4581m	0.0205m	-**-	-**-	1:115598544
3315	163°38'05"	0.00"	514955.377m	0.0065m	1:154611011
DOP5	-5.6436m	0.0128m	-**-	-**-	1:154611011
3315	145°13'34"	0.00"	588474.397m	0.0088m	1:130570873
GETI	+3.9934m	0.0194m	-**-	-**-	1:130570873
3315	-**-	-**-	-**-	-**-	-**-
KUAL	-**-	-**-	-**-	-**-	-**-
3315	150°45'05"	0.00"	711110.611m	0.0093m	1:149964197
P221	+100.1520m	0.0203m	-**-	-**-	1:149964197
3335	152°55'24"	0.01"	304442.601m	0.0112m	1:53398736
3402	+60.1099m	0.0286m	-**-	-**-	1:53398736
3335	148°35'27"	0.01"	297186.598m	0.0063m	1:93036697

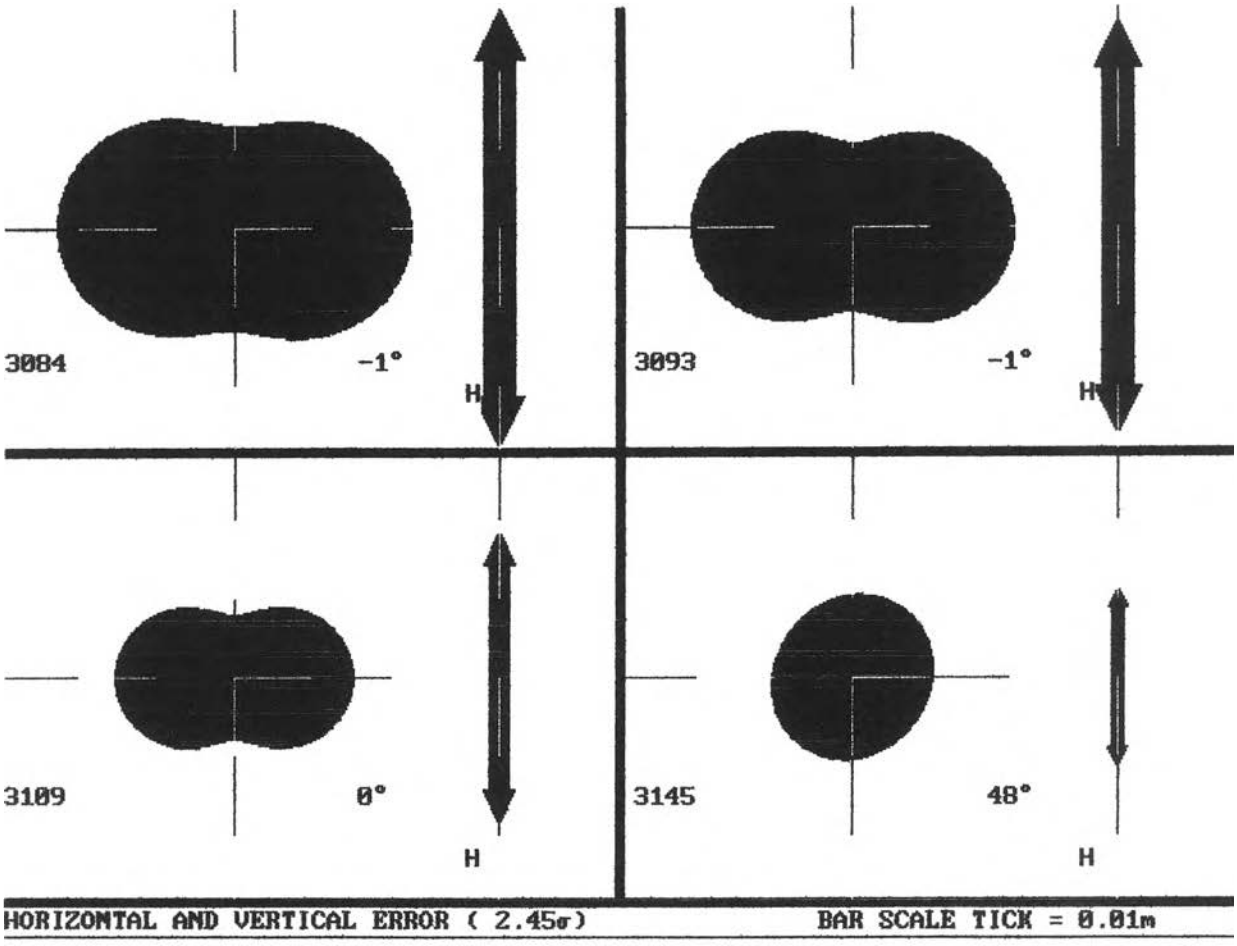
3405	+8.8250m	0.0129m	-**-	-**-	1:93036697
3335	16°39'36"	0.00"	454599.537m	0.0056m	1:157774791
3427	+70.9038m	0.0129m	-**-	-**-	1:157774791
3335	35°55'36"	0.00"	448077.755m	0.0083m	1:106397139
3442	+1.9222m	0.0187m	-**-	-**-	1:106397139
3335	355°09'35"	0.00"	545782.560m	0.0079m	1:135360148
3477	+24.1028m	0.0258m	-**-	-**-	1:135360148
3335	349°55'58"	0.00"	1136008.018m	0.0103m	1:215403942
3656	+215.1563m	0.0445m	-**-	-**-	1:215403942
3335	227°10'59"	0.01"	231623.577m	0.0072m	1:62989980
3657	+17.6011m	0.0129m	-**-	-**-	1:62989980
3335	8°25'28"	0.01"	508873.125m	0.0077m	1:128740248
CHUL	+5.4372m	0.0246m	-**-	-**-	1:128740248
3335	169°54'22"	0.01"	342110.896m	0.0081m	1:82375809
DOP5	+9.2517m	0.0166m	-**-	-**-	1:82375809
3335	142°31'14"	0.01"	411540.652m	0.0111m	1:72918052
GETI	+18.8886m	0.0214m	-**-	-**-	1:72918052
3335	139°22'45"	0.00"	561478.660m	0.0068m	1:162722373
KUAL	+74.4006m	0.0129m	-**-	-**-	1:162722373
3335	150°32'09"	0.01"	532538.973m	0.0110m	1:95139787
P221	+115.0472m	0.0218m	-**-	-**-	1:95139787
3402	43°14'30"	0.11"	23859.968m	0.0119m	1: 3923836
3405	-51.2849m	0.0270m	-**-	-**-	1: 3923836
3402	359°32'29"	0.00"	706586.785m	0.0065m	1:212709775
3427	+10.7939m	0.0270m	-**-	-**-	1:212709775
3402	11°19'02"	0.01"	645898.042m	0.0081m	1:155709513
3442	-58.1877m	0.0299m	-**-	-**-	1:155709513
3402	347°25'56"	0.00"	835544.915m	0.0100m	1:164385684
3477	-36.0071m	0.0367m	-**-	-**-	1:164385684
3402	346°34'41"	0.00"	1429879.292m	0.0120m	1:233110712
3656	+155.0464m	0.0514m	-**-	-**-	1:233110712

3402	290°22'38"	0.01"	328691.083m	0.0156m	1:41191527
3657	-42.5088m	0.0270m	-**-	-**-	1:41191527
3402	355°28'57"	0.01"	777056.222m	0.0086m	1:177727508
CHUL	-54.6728m	0.0343m	-**-	-**-	1:177727508
3402	230°15'08"	0.02"	102445.523m	0.0132m	1:15251900
DOP5	-50.8582m	0.0243m	-**-	-**-	1:15251900
3402	116°35'38"	0.02"	124837.488m	0.0163m	1:15049978
GETI	-41.2213m	0.0254m	-**-	-**-	1:15049978
3402	124°32'58"	0.01"	274884.885m	0.0142m	1:37990753
KUAL	+14.2907m	0.0270m	-**-	-**-	1:37990753
3402	147°32'10"	0.01"	228711.637m	0.0120m	1:37500247
P221	+54.9373m	0.0258m	-**-	-**-	1:37500247
3405	-**-	-**-	-**-	-**-	-**-
3427	-**-	-**-	-**-	-**-	-**-
3405	10°11'00"	0.00"	625773.779m	0.0047m	1:262749825
3442	-6.9028m	0.0158m	-**-	-**-	1:262749825
3405	346°04'57"	0.00"	822372.272m	0.0063m	1:256713052
3477	+15.2777m	0.0218m	-**-	-**-	1:256713052
3405	345°48'11"	0.00"	1416904.586m	0.0091m	1:304635402
3656	+206.3313m	0.0422m	-**-	-**-	1:304635402
3405	-**-	-**-	-**-	-**-	-**-
3657	-**-	-**-	-**-	-**-	-**-
3405	354°10'37"	0.00"	761220.344m	0.0052m	1:285101942
CHUL	-3.3879m	0.0205m	-**-	-**-	1:285101942
3405	228°56'50"	0.01"	126160.723m	0.0078m	1:31764287
DOP5	+0.4266m	0.0128m	-**-	-**-	1:31764287
3405	127°34'26"	0.02"	120195.504m	0.0100m	1:23457324
GETI	+10.0636m	0.0194m	-**-	-**-	1:23457324
3405	-**-	-**-	-**-	-**-	-**-
KUAL	-**-	-**-	-**-	-**-	-**-
3405	153°10'48"	0.01"	235738.959m	0.0092m	1:50244841
P221	+106.2222m	0.0203m	-**-	-**-	1:50244841

3427	118°56'28"	0.01"	151070.303m	0.0078m	1:38165330
3442	-68.9816m	0.0158m	-**-	-**-	1:38165330
3427	301°50'33"	0.01"	206820.440m	0.0094m	1:43265809
3477	-46.8011m	0.0218m	-**-	-**-	1:43265809
3427	334°39'10"	0.00"	757774.661m	0.0106m	1:139896872
3656	+144.2525m	0.0422m	-**-	-**-	1:139896872
3427	-**-	-**-	-**-	-**-	-**-
3657	-**-	-**-	-**-	-**-	-**-
3427	320°51'19"	0.02"	87792.836m	0.0076m	1:22603713
CHUL	-65.4667m	0.0205m	-**-	-**-	1:22603713
3427	185°24'54"	0.00"	775505.947m	0.0063m	1:241290391
DOP5	-61.6522m	0.0128m	-**-	-**-	1:241290391
3427	171°13'31"	0.00"	771384.727m	0.0074m	1:203040530
GETI	-52.0152m	0.0194m	-**-	-**-	1:203040530
3427	-**-	-**-	-**-	-**-	-**-
KUAL	-**-	-**-	-**-	-**-	-**-
3427	171°50'28"	0.00"	908622.752m	0.0086m	1:207116096
P221	+44.1434m	0.0203m	-**-	-**-	1:207116096
3442	300°53'16"	0.01"	357778.786m	0.0113m	1:62199091
3477	+22.1805m	0.0264m	-**-	-**-	1:62199091
3442	329°13'54"	0.00"	884822.162m	0.0129m	1:134398505
3656	+213.2341m	0.0454m	-**-	-**-	1:134398505
3442	220°13'05"	0.00"	676755.208m	0.0066m	1:201104806
3657	+15.6789m	0.0158m	-**-	-**-	1:201104806
3442	307°13'59"	0.01"	234816.504m	0.0114m	1:40257508
CHUL	+3.5149m	0.0261m	-**-	-**-	1:40257508
3442	196°35'35"	0.00"	728427.080m	0.0080m	1:178987911
DOP5	+7.3295m	0.0188m	-**-	-**-	1:178987911
3442	181°25'52"	0.00"	689354.129m	0.0083m	1:163222292
GETI	+16.9664m	0.0228m	-**-	-**-	1:163222292
3442	172°57'00"	0.00"	795359.852m	0.0045m	1:347211493
KUAL	+72.4784m	0.0158m	-**-	-**-	1:347211493

3442	180°26'27"	0.00"	826267.815m	0.0093m 1:173732543
P221	+113.1250m	0.0233m	-**-	-**- 1:173732543
3477	345°05'19"	0.01"	594555.326m	0.0108m 1:107763019
3656	+191.0535m	0.0462m	-**-	-**- 1:107763019
3477	189°57'35"	0.00"	712056.847m	0.0061m 1:228137623
3657	-6.5016m	0.0218m	-**-	-**- 1:228137623
3477	108°27'09"	0.01"	127076.141m	0.0141m 1:17700758
CHUL	-18.6656m	0.0297m	-**-	-**- 1:17700758
3477	173°02'39"	0.00"	887008.215m	0.0089m 1:194962628
DOP5	-14.8511m	0.0274m	-**-	-**- 1:194962628
3477	161°03'51"	0.00"	919460.343m	0.0105m 1:172170309
GETI	-5.2142m	0.0324m	-**-	-**- 1:172170309
3477	156°51'24"	0.00"	1053606.442m	0.0068m 1:303895632
KUAL	+50.2979m	0.0218m	-**-	-**- 1:303895632
3477	162°52'20"	0.00"	1053467.522m	0.0112m 1:184567753
P221	+90.9445m	0.0331m	-**-	-**- 1:184567753
3656	178°18'27"	0.00"	1276106.839m	0.0084m 1:299061732
3657	-197.5552m	0.0422m	-**-	-**- 1:299061732
3656	155°34'42"	0.01"	672839.615m	0.0120m 1:109780972
CHUL	-209.7191m	0.0467m	-**-	-**- 1:109780972
3656	169°27'44"	0.00"	1478118.885m	0.0110m 1:263390773
DOP5	-205.9046m	0.0453m	-**-	-**- 1:263390773
3656	162°12'40"	0.00"	1513121.079m	0.0125m 1:237672335
GETI	-196.2677m	0.0484m	-**-	-**- 1:237672335
3656	159°22'14"	0.00"	1644221.131m	0.0098m 1:328601628
KUAL	-140.7557m	0.0422m	-**-	-**- 1:328601628
3656	163°14'37"	0.00"	1647737.049m	0.0131m 1:246151548
P221	-100.1091m	0.0490m	-**-	-**- 1:246151548
3657	20°02'41"	0.00"	704542.380m	0.0061m 1:226439062
CHUL	-12.1640m	0.0205m	-**-	-**- 1:226439062
3657	127°46'19"	0.01"	291513.829m	0.0080m 1:71718231
DOP5	-8.3495m	0.0128m	-**-	-**- 1:71718231

3657	111° 44'10"	0.00"	452996.026m	0.0108m	1:81874323
GETI	+1.2875m	0.0194m	-**-	-**-	1:81874323
3657	-**-	-**-	-**-	-**-	-**-
KUAL	-**-	-**-	-**-	-**-	-**-
3657	125° 10'08"	0.00"	529295.486m	0.0106m	1:97729441
P221	+97.4461m	0.0203m	-**-	-**-	1:97729441
CHUL	181° 06'50"	0.00"	840309.714m	0.0083m	1:199413825
DOP5	+3.8145m	0.0248m	-**-	-**-	1:199413825
CHUL	168° 07'20"	0.00"	848286.657m	0.0094m	1:176733473
GETI	+13.4515m	0.0289m	-**-	-**-	1:176733473
CHUL	162° 40'33"	0.00"	973850.846m	0.0058m	1:330808192
KUAL	+68.9635m	0.0205m	-**-	-**-	1:330808192
CHUL	169° 06'37"	0.00"	984917.514m	0.0104m	1:186246582
P221	+109.6101m	0.0297m	-**-	-**-	1:186246582
DOP5	87° 01'56"	0.01"	190636.614m	0.0073m	1:51169044
GETI	+9.6369m	0.0104m	-**-	-**-	1:51169044
DOP5	106° 25'49"	0.00"	318266.941m	0.0086m	1:72180320
KUAL	+65.1490m	0.0128m	-**-	-**-	1:72180320
DOP5	122° 14'36"	0.01"	238449.447m	0.0071m	1:65501231
P221	+105.7956m	0.0107m	-**-	-**-	1:65501231
GETI	131° 10'38"	0.01"	152231.949m	0.0098m	1:30380191
KUAL	+55.5120m	0.0194m	-**-	-**-	1:30380191
GETI	175° 27'42"	0.01"	137530.902m	0.0066m	1:41010911
P221	+96.1586m	0.0097m	-**-	-**-	1:41010911
KUAL	250° 31'33"	0.02"	110051.347m	0.0113m	1:19020780
P221	+40.6466m	0.0203m	-**-	-**-	1:19020780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H
3093
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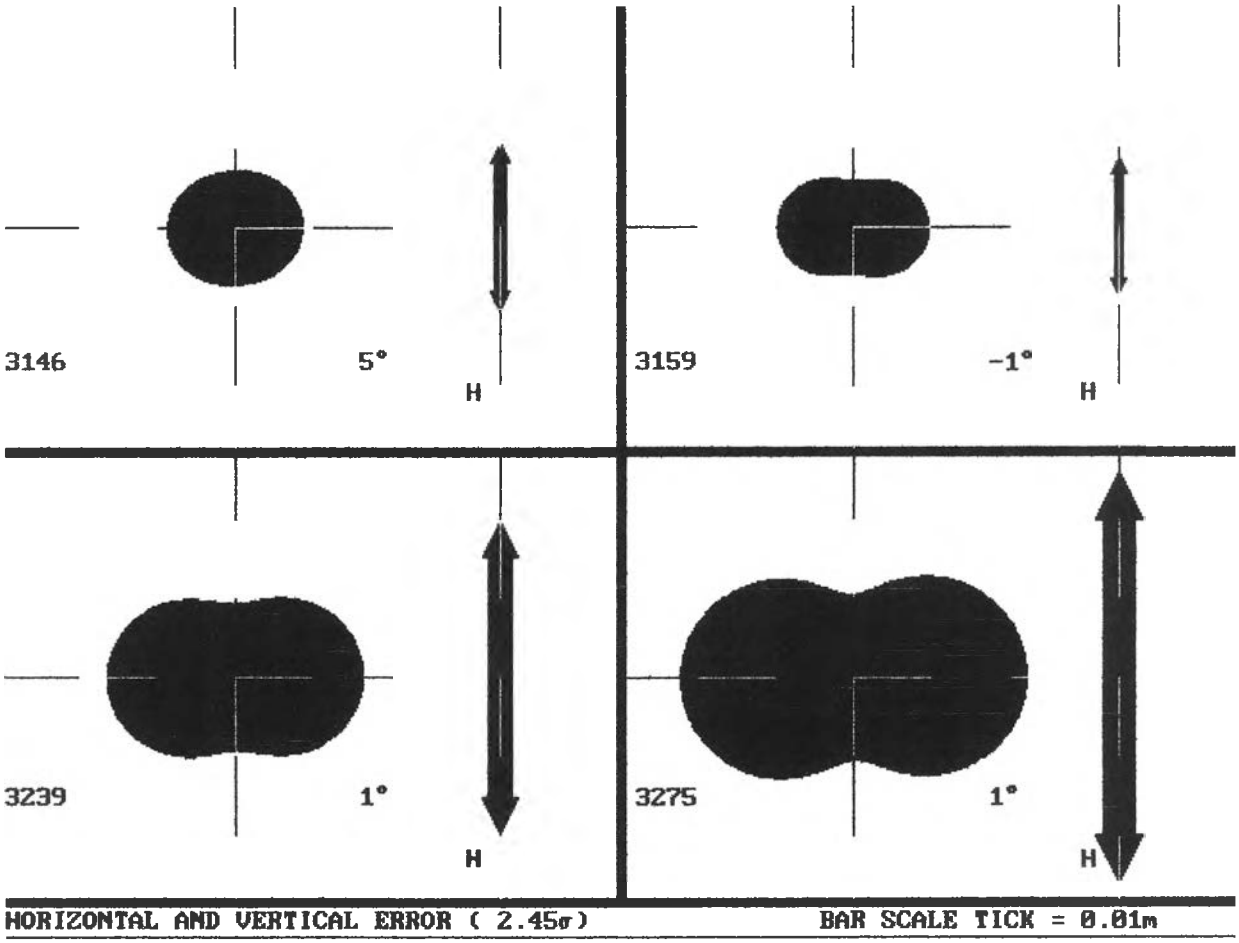
0°
H
3145
48°
H
HORIZONTAL AND VERTICAL ERROR (2.45σ)
BAR SCALE TICK = 0.01m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3159
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1°
H
3275
1°
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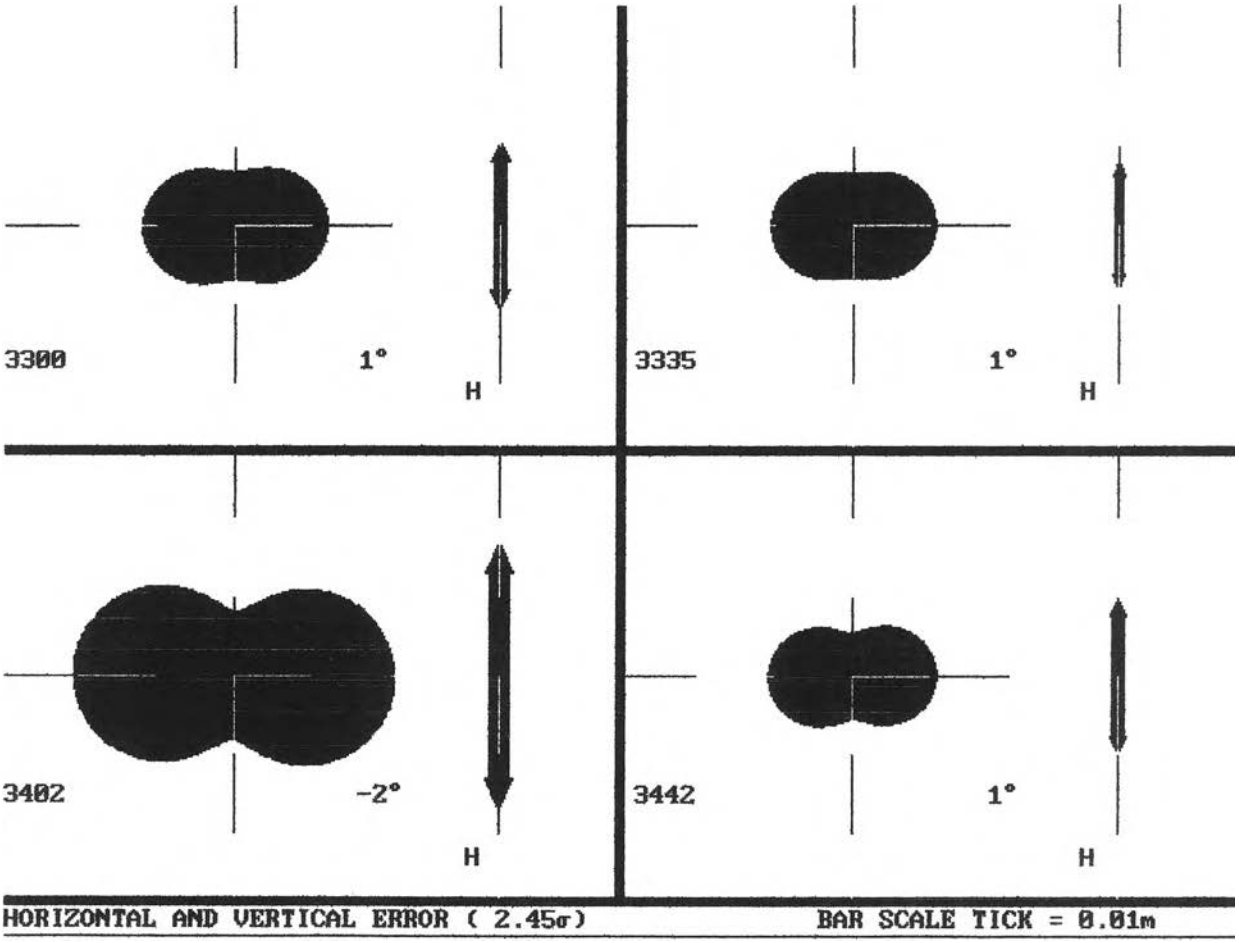
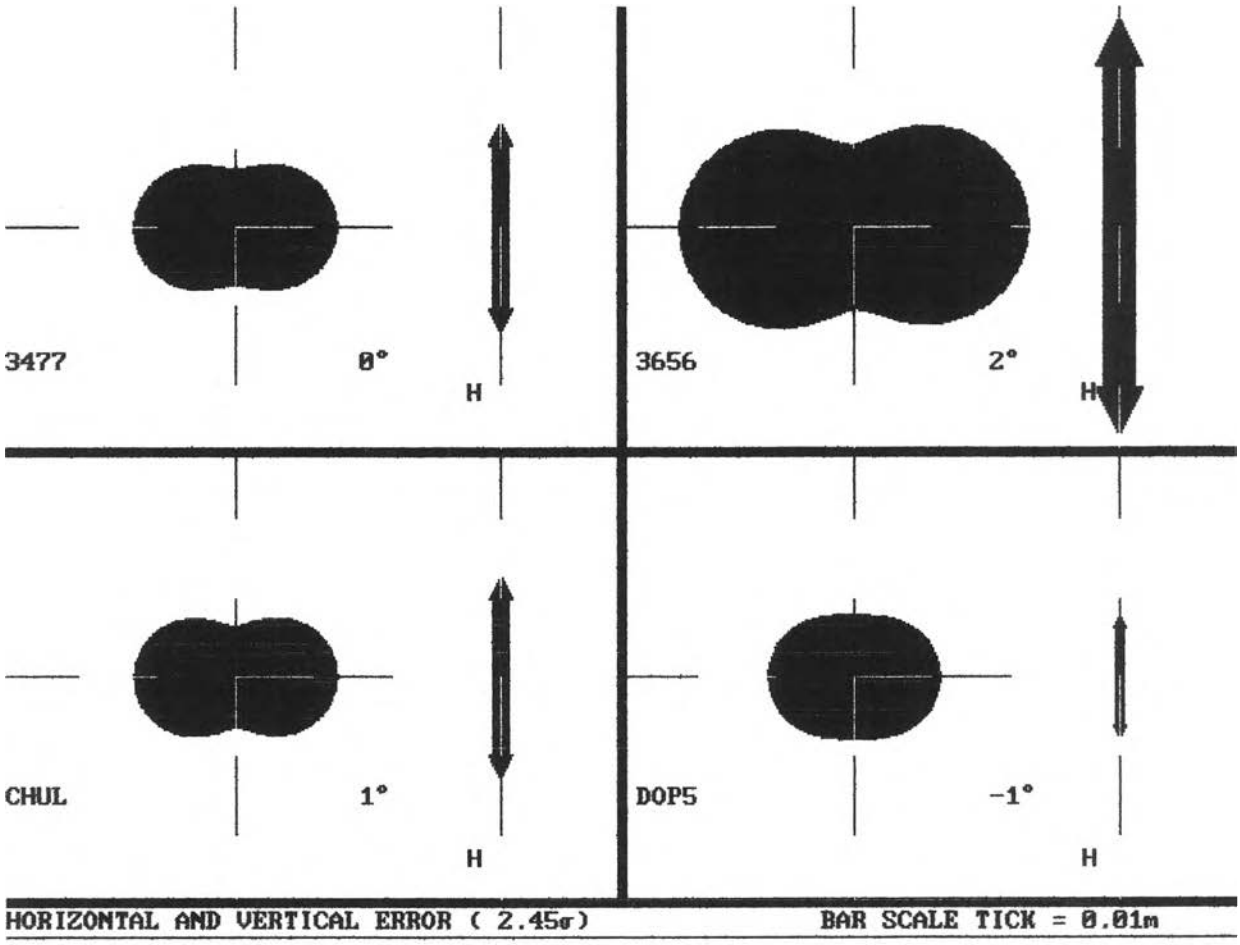
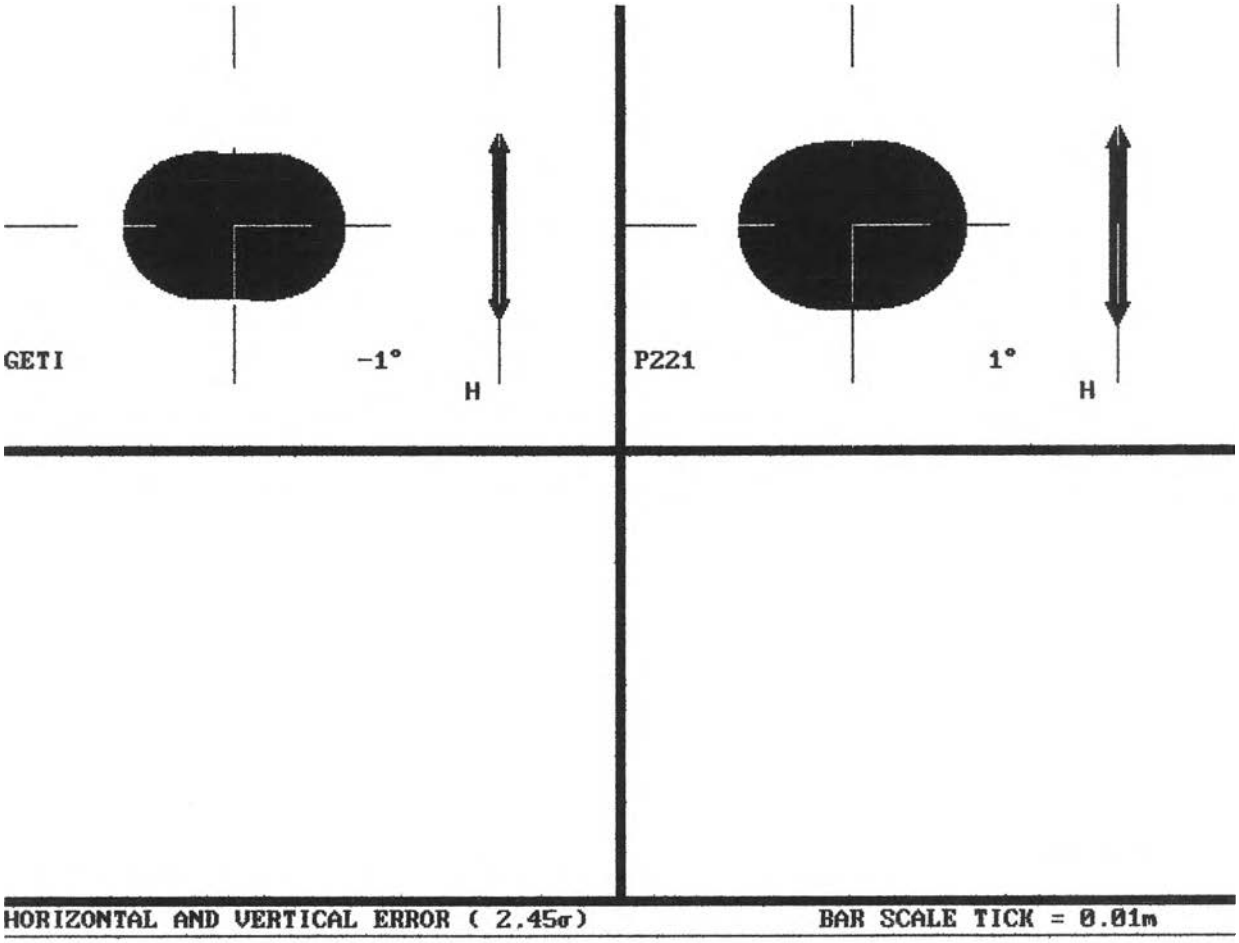
HORIZONTAL AND VERTICAL ERROR (2.45σ)
BAR SCALE TICK = 0.01m


3300
1°
H
3335
1°
H
3402
-2°
H
3442
1°
H
HORIZONTAL AND VERTICAL ERROR (2.45σ)
BAR SCALE TICK = 0.01m


3477
0°
H
3656
2°
H
CHUL
1°
H
DOP5
-1°
H
HORIZONTAL AND VERTICAL ERROR (2.45σ)
BAR SCALE TICK = 0.01m


GETI
-1°
H
P221
1°
H
HORIZONTAL AND VERTICAL ERROR (2.45σ)
BAR SCALE TICK = 0.01m

ภาคผนวก ง

SUMMARY OF SATELLITE-OBSERVED STATION

SUMMARY OF SATELLITE-OBSERVED STATION

STATION NAME/LOCAL NUMBER	LOCATION	DOPPLER NO.
DOPPLER STATION 32032	RONG KWANG, THAILAND	32032

STAMPING ON MARK: 'M' CONCRETE IN THAI 'DOPPLER STATION 8 NOVEMBER 1987 RONG KWANG'

AGENCY (CAST IN MARK)	TYPE OF STATION MARK
ROYAL THAI SURVEY DEPARTMENT	BRONZE DISK

DOPPLER OBSERVATIONS

EQUIPMENT/SERIAL NO.	HEIGHT OF TRACKING EQUIPMENT REFERENCE POINT ABOVE STATION MARK	TRACKING EQUIPMENT REFERENCE POINT
MRS 1502-OS-405	1.919m	RED BAND ON ANTENNA
OBSERVED BY (AGENCY)	SATELLITE(S) OBSERVED	PERIOD OF OCCUPATION
DMAHTC/RTSO	30110, 30130, 30200, 30240, 30480, 30500	31 OCT - 04 NOV 1987

SATELLITE-DERIVED COORDINATES

SOLUTION ACCEPTED	DEGREES OF FREEDOM:	RESIDUAL RMS	STATION SET	GRAVITY MODEL	ELLIPSOID	MINIMUM ELEV. ANGLE:
YES	1559	0.20m	WGS 84	WGS 84	WGS 84	5 DEG.

(Satellite-derived coordinates referred to station mark)

φ N 18 19 51.376	λ E 100 18 43.524	h 169.39m	ACCURACY 1.5 METERS IN EACH AXIS (90% LINEAR ERROR)
X 1 084 122.80m	Y 5 958 018.49m	Z 1 993 241.07m	from WGS 84)

(Satellite-derived coordinates of station mark transformed to local datum)

φ N 18 19 46.755	λ E 100 18 55.529	h 172.45m	DATUM INDIAN 1975
X -1 084 405.75m	Y 5 957 981.49m	Z 1 992 946.06m	ELLIPSOID EVEREST
ΔX -206	ΔY -837	ΔZ -295	DATE OF TRANSFORMATION 18 MAY 1988

GROUND SURVEY COORDINATES OF STATION MARK

φ	λ	DATUM (HORIZONTAL)	ELLIPSOID

DATE OF ADJUSTMENT	ORDER	SURVEY BY (AGENCY)	DATE	LOCATION OF SURVEY DATA

ELEVATION (H)	DATUM (VERTICAL)	GEOID HEIGHT (N) (INDIAN 75)	ELLIPSOID HEIGHT (h)
203m		-31m + 5m(1σ)	

WATER (ELEV.)	ESTABLISHED BY (AGENCY)	DATE	SOURCE OF (N)
			COMPUTED GRAVIMETRICALLY USING WGS 84 POTENTIAL COEFFICIENTS

CONNECTION TO LOCAL CONTROL

FROM	TO	( ) AZ FROM NORTH	DISTANCE

REMARKS:
NOTE:
WGS 72 coordinates for this station are:
LAT 18 19 51.234 N
LONG 100 18 42.970 E
ELLIP. HT. 168.55 m
Transformation parameters (from WGS 84 to Indian 75) were derived from Doppler stations 10080, 10082, 10083, 10084, 32030, and 32031.

OTHER RELATED DATA FOR THIS STATION

DATA	AVAIL.	LOCATION/REMARKS
STATION OCCUPATION REPORT	X	DMAHTC
GEODETIC INFORMATION REPORT		
STATION DESCRIPTION	X	DMAHTC
SURVEY DIAGRAM		
STATION SITE SKETCH	X	DMAHTC
PHOTOIDENTIFICATION	X	DMAHTC
ASTRONOMIC COORDINATES		
STATION PHOTOS	X	DMAHTC

PREPARED BY/DATE	CHECKED BY/DATE	REVISED BY/DATE	CHECKED BY/DATE
DMAHTC/RBK/MAY 88	DMAHTC/BHS/MAY 88		

DMA FORM 3290-1-R
SEP 79

REFERENCE OR PACKAGE NO	DATE DISPATCHED: 31 May 1988
CONTROL NUMBER	SUSPENSE DATE
CLASSIFICATION: UNCLASSIFIED	FILE DESIGNATION

Director
Hydrographic/Topographic Center
ATTN: GSGA (Satellite Records Desk)
Washington, D.C. 20315-0030

U.S. Defense Attache Office
American Embassy (For: RTSD)
APO San Francisco 96346

AND SPECIAL INSTRUCTIONS

☐ MATERIALS REQUIRED
- ☐ ON LOAN
- ☐ FOR RETENTION
- ☒ RETURNED

DATE REQUIRED

☒ MATERIALS TRANSMITTED
- ☐ ON LOAN
- ☒ FOR RETENTION
- ☐ RETURNING LOANED MATERIALS

DESCRIPTION OF DOCUMENT (Describe document sufficiently to differentiate from all other documents)

Enclosed is one copy each of Satellite-Observed Station Card, Station Description, and Station Site Sketch for Thailand Doppler Stations 32030 through 32039.

The Indian 1975 Datum (Everest Ellipsoid) coordinates for Doppler stations 32032 through 32039 were obtained from the transformation of WGS 84 positions using datum shift parameters derived from Doppler stations 10080, 10082, 10083, 10084, 32030, and 32031.

Copy w/o enclosures to: DMALO Hawk
DMA REP William B. Meyers

TYPED OR PRINTED NAME, GRADE AND TITLE OF REQUESTER	SIGNATURE	DATE

INTERNAL ROUTING

TO	DATE	TO	DATE	TO	DATE	TO	DATE
		3.		5.		7.	
		4.		6.		8.	

DOCUMENT RECEIPT

ACKNOWLEDGEMENT OF RECEIPT ☒ IS REQUESTED ☐ IS NOT REQUESTED

TYPED OR PRINTED NAME, GRADE AND TITLE OF RECEIVER	SIGNATURE	DATE RECEIVED

DMAAC 5002-2-R

REPLACES DMAAC FORMS 8771/500-12, 8211-4, AND HTC FORM 5000-1 WHICH MAY BE USED UNTIL EXHAUSTED.

ประวัติผู้เขียน

ร้อยเอกอนุเทพ ภาณุมาศตระกูล เกิดเมื่อวันที่ 28 มีนาคม พ.ศ. 2514 ที่กรุงเทพมหานคร สำเร็จการศึกษาปริญญาวิศวกรรมศาสตรบัณฑิต สาขาวิศวกรรมแผนที่ โรงเรียนนายร้อยพระจุลจอมเกล้า ในปีการศึกษา 2536 และเข้าศึกษาต่อหลักสูตรวิศวกรรมศาสตรมหาบัณฑิต ที่จุฬาลงกรณ์มหาวิทยาลัย เมื่อ พ.ศ. 2541 ปัจจุบันรับราชการในตำแหน่งประจำแผนกยีออเดซี กองยีออเดซีและยีออฟิสิกส์ กรมแผนที่ทหาร