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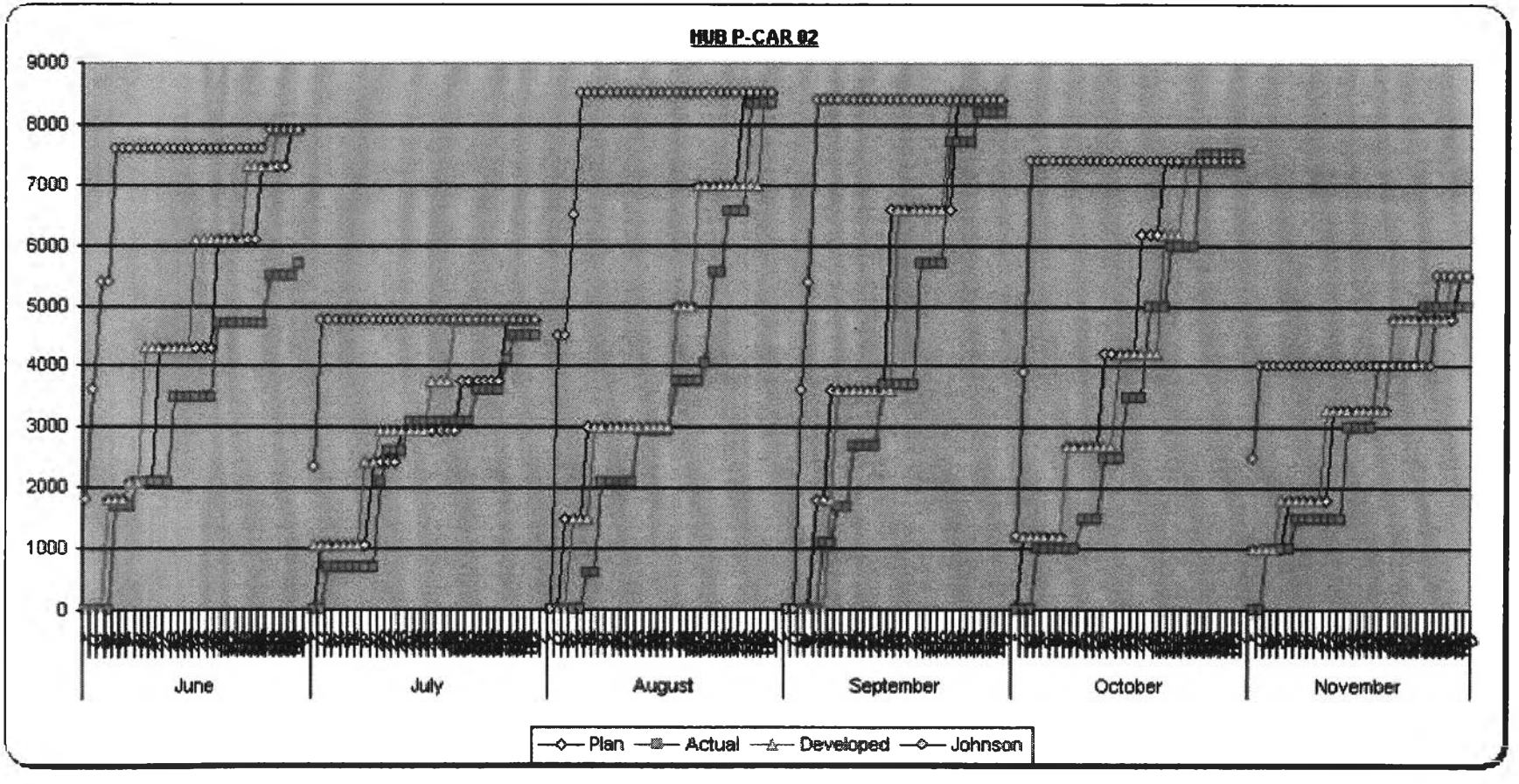
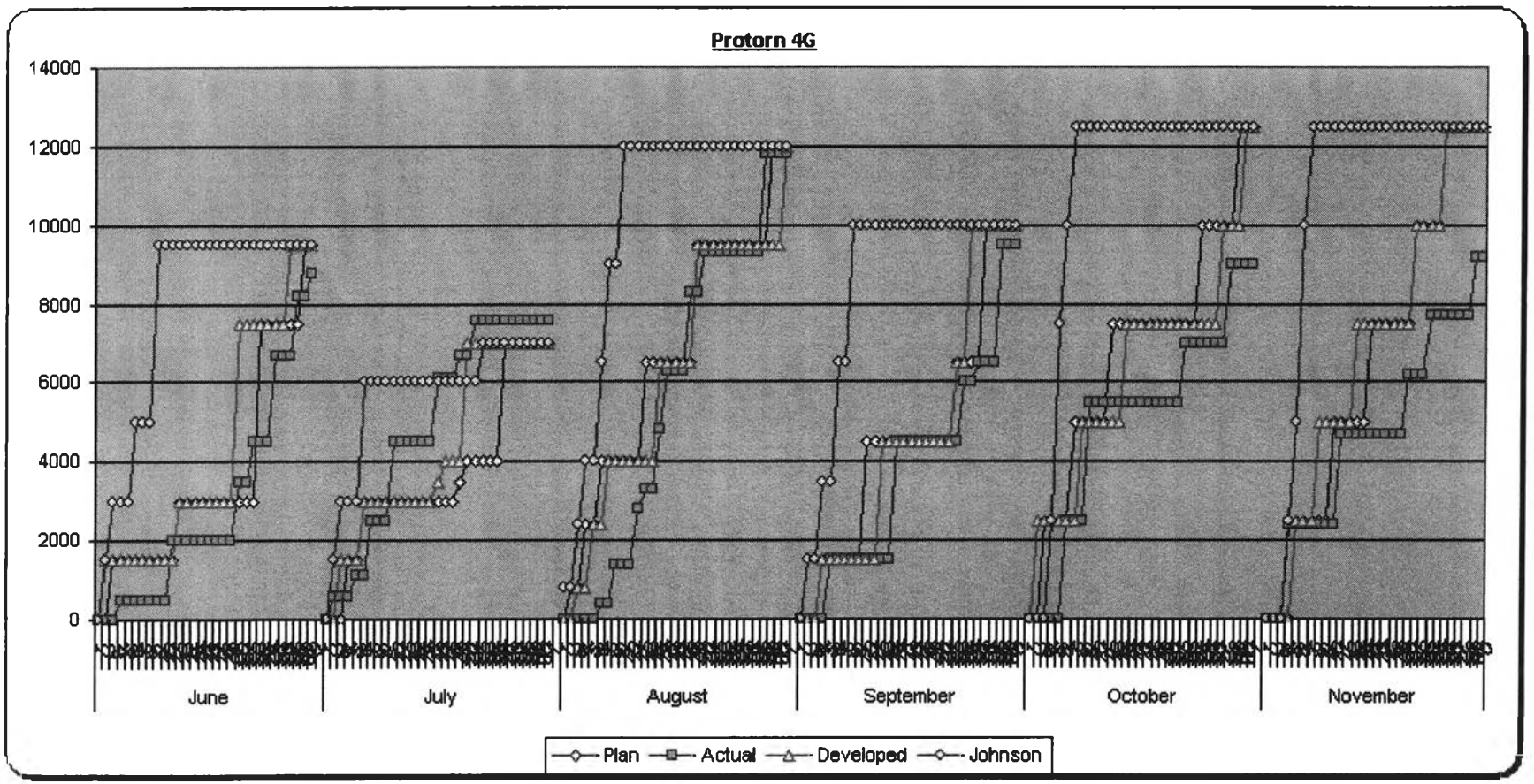
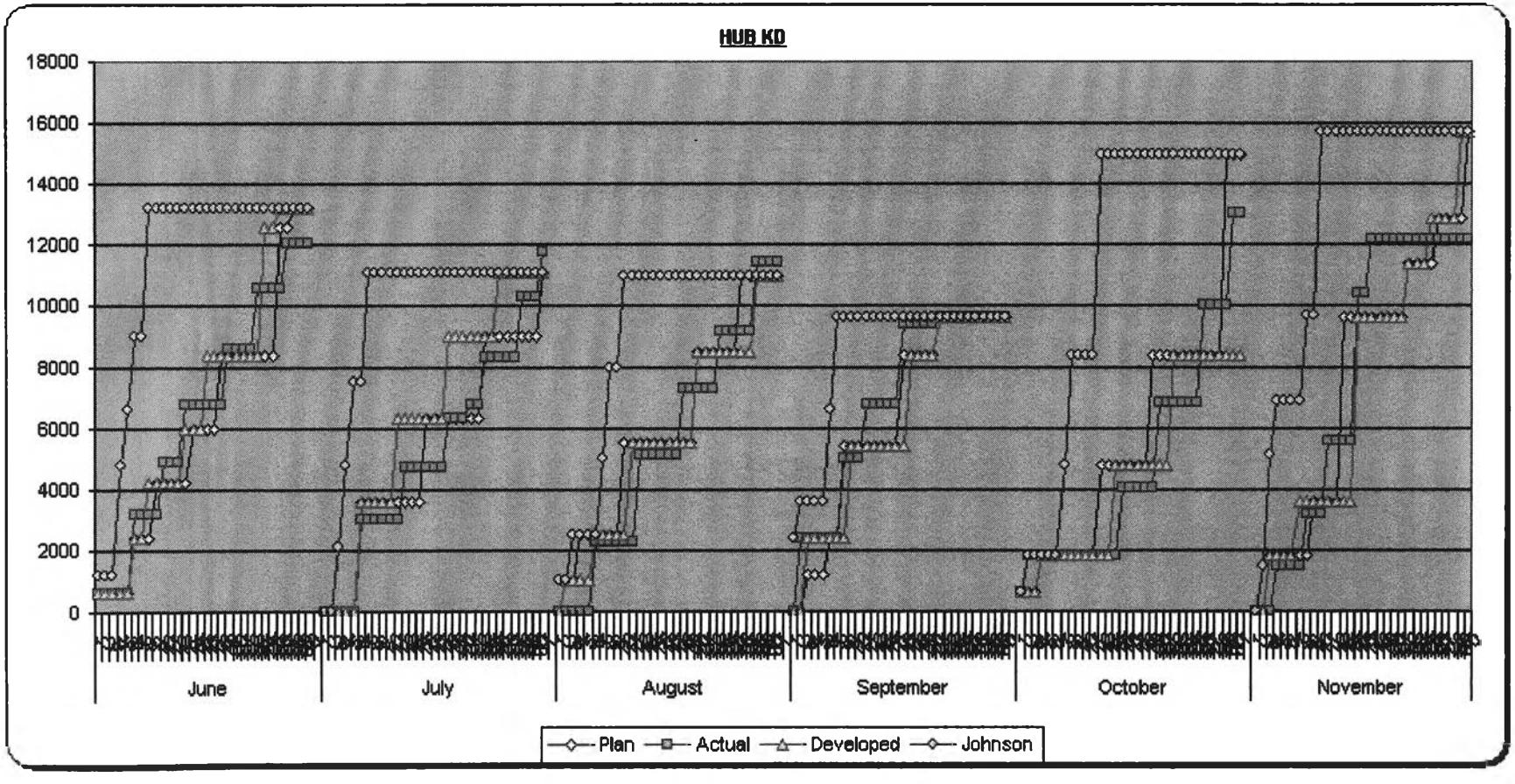
APPENDICES

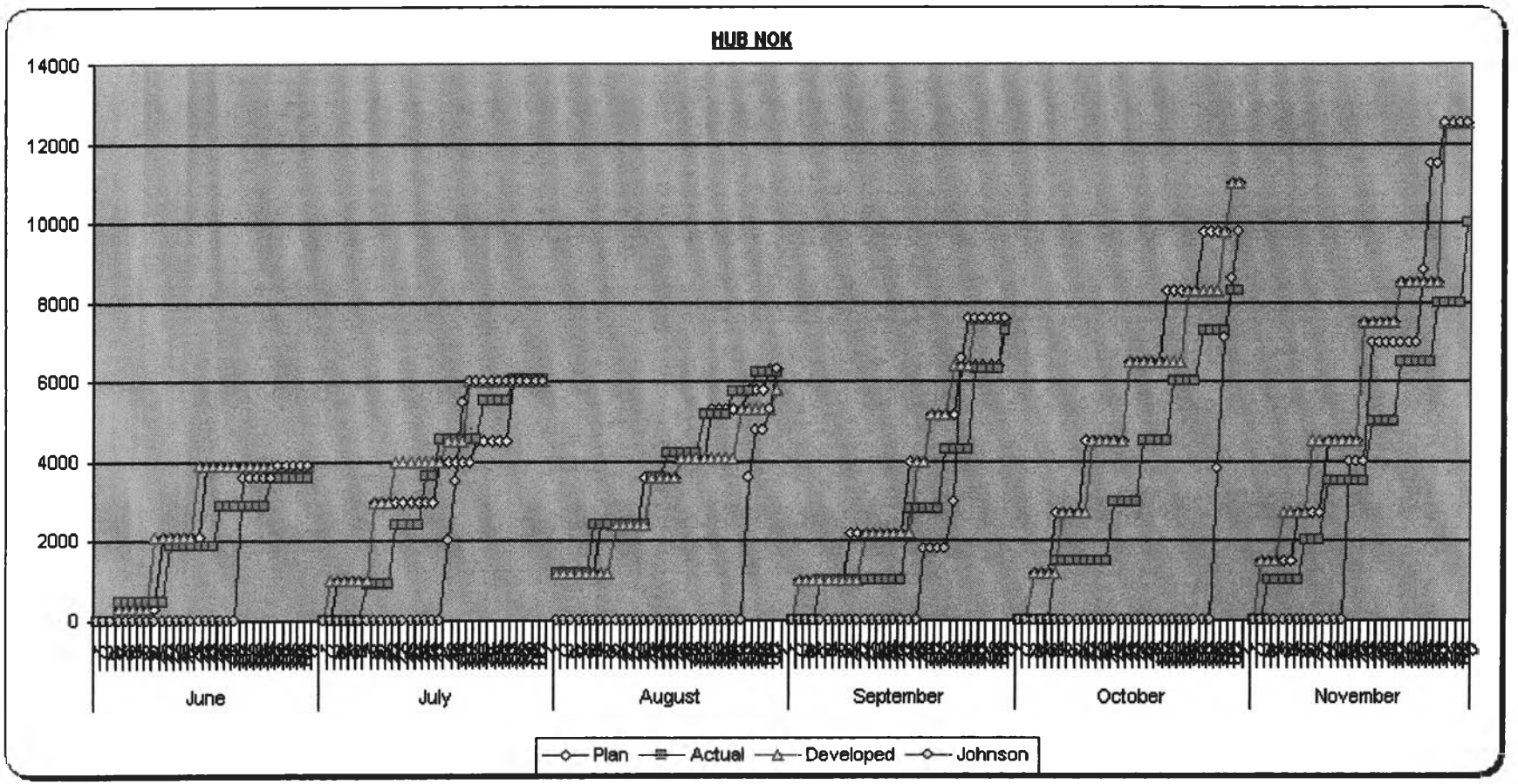
APPENDIX A

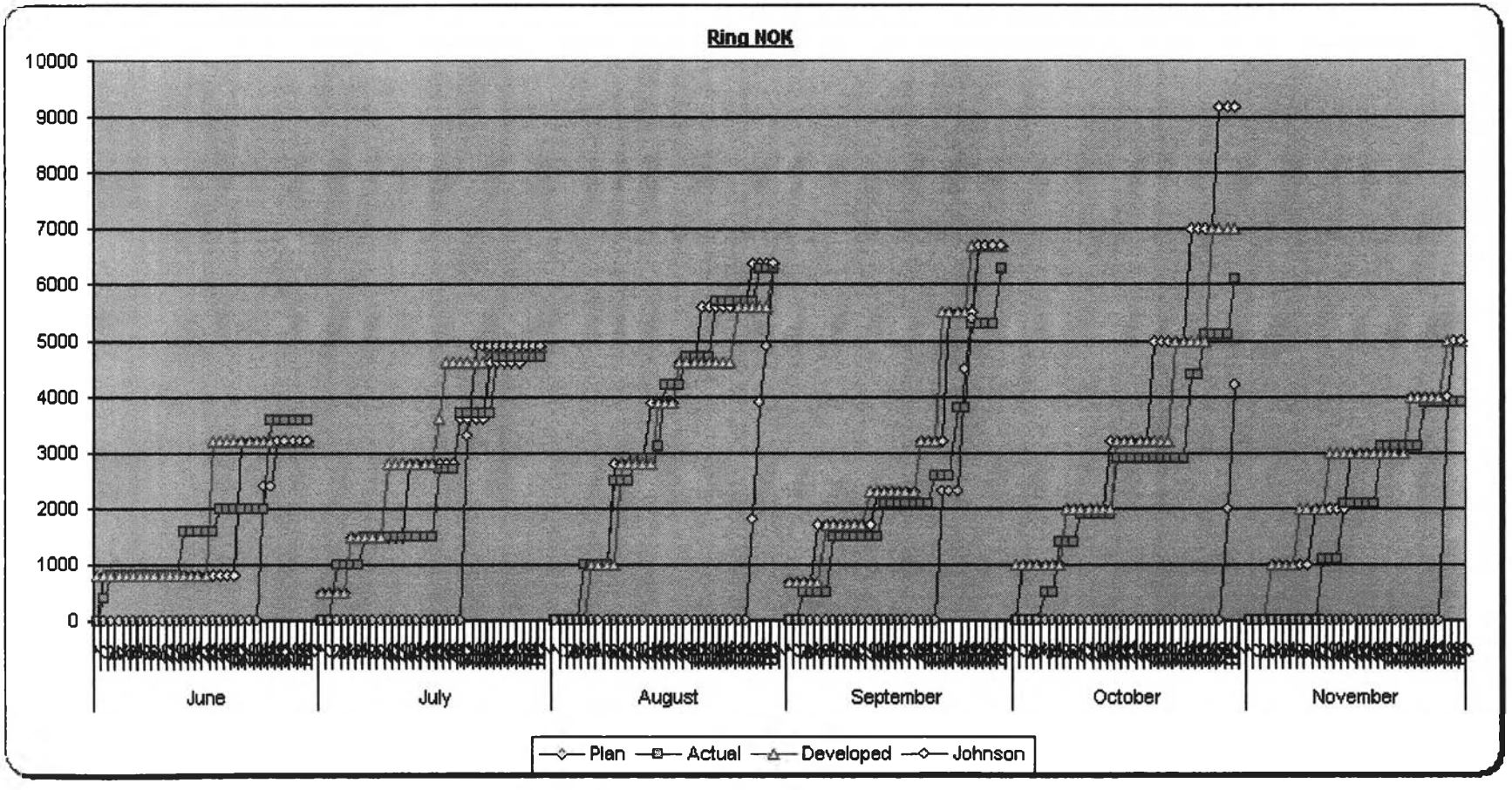
The Cumulative Plot by Product by Month

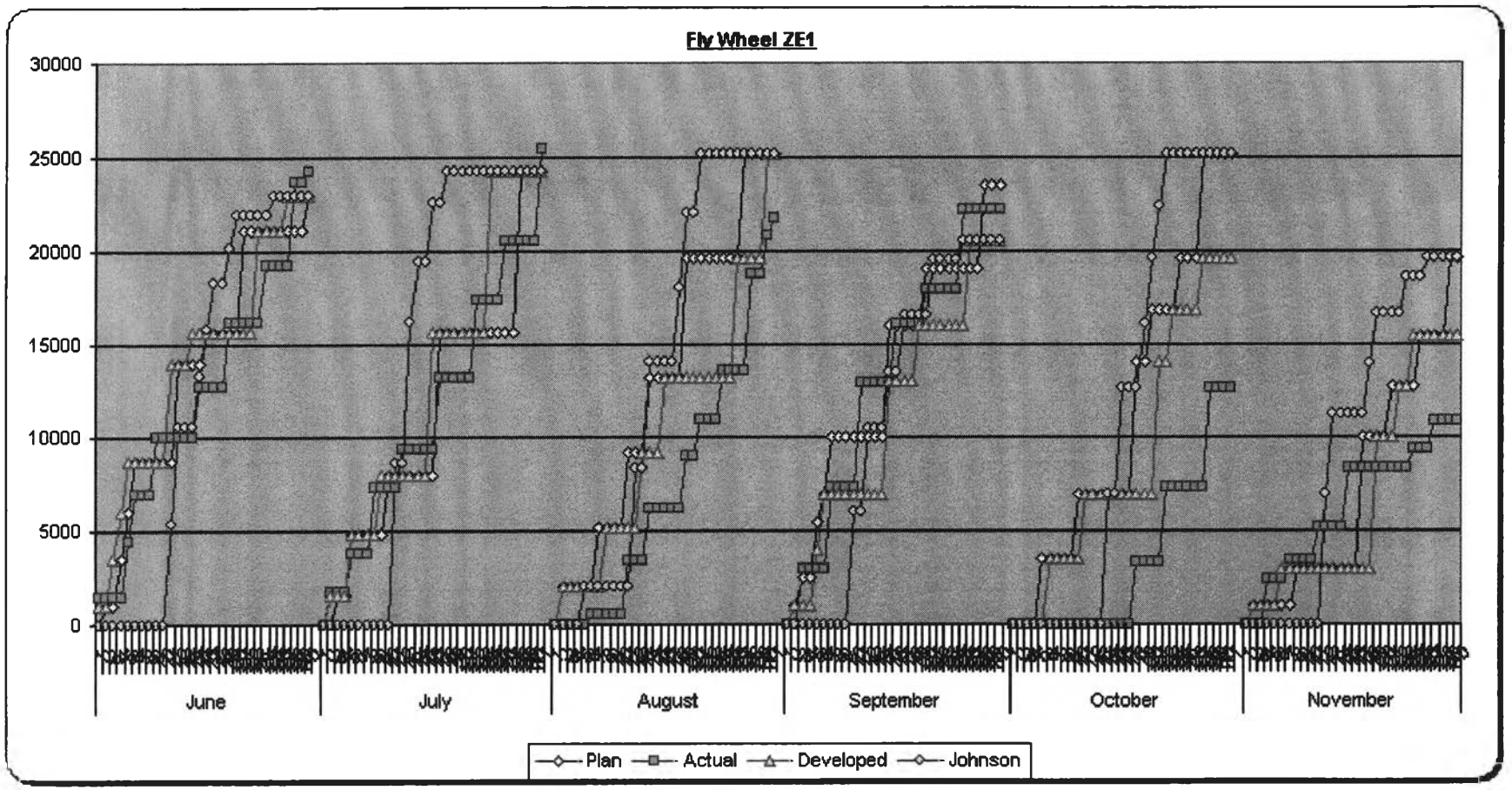

HUB P-CAR 02
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
June
July
August
September
October
November
Plan
Actual
Developed
Johnson

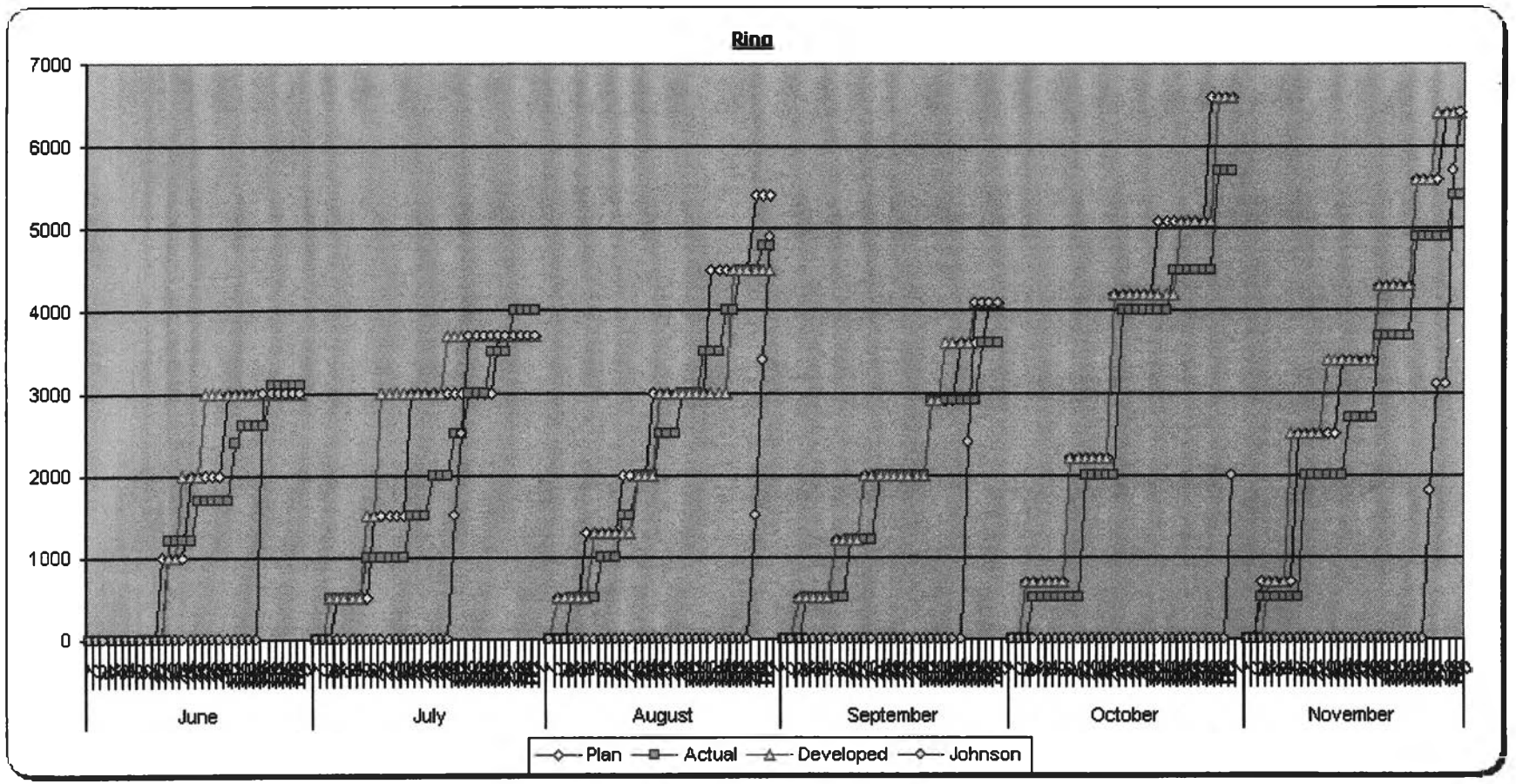

Protorn 4G
14000
12000
10000
8000
6000
4000
2000
0
June
July
August
September
October
November
Plan
Actual
Developed
Johnson

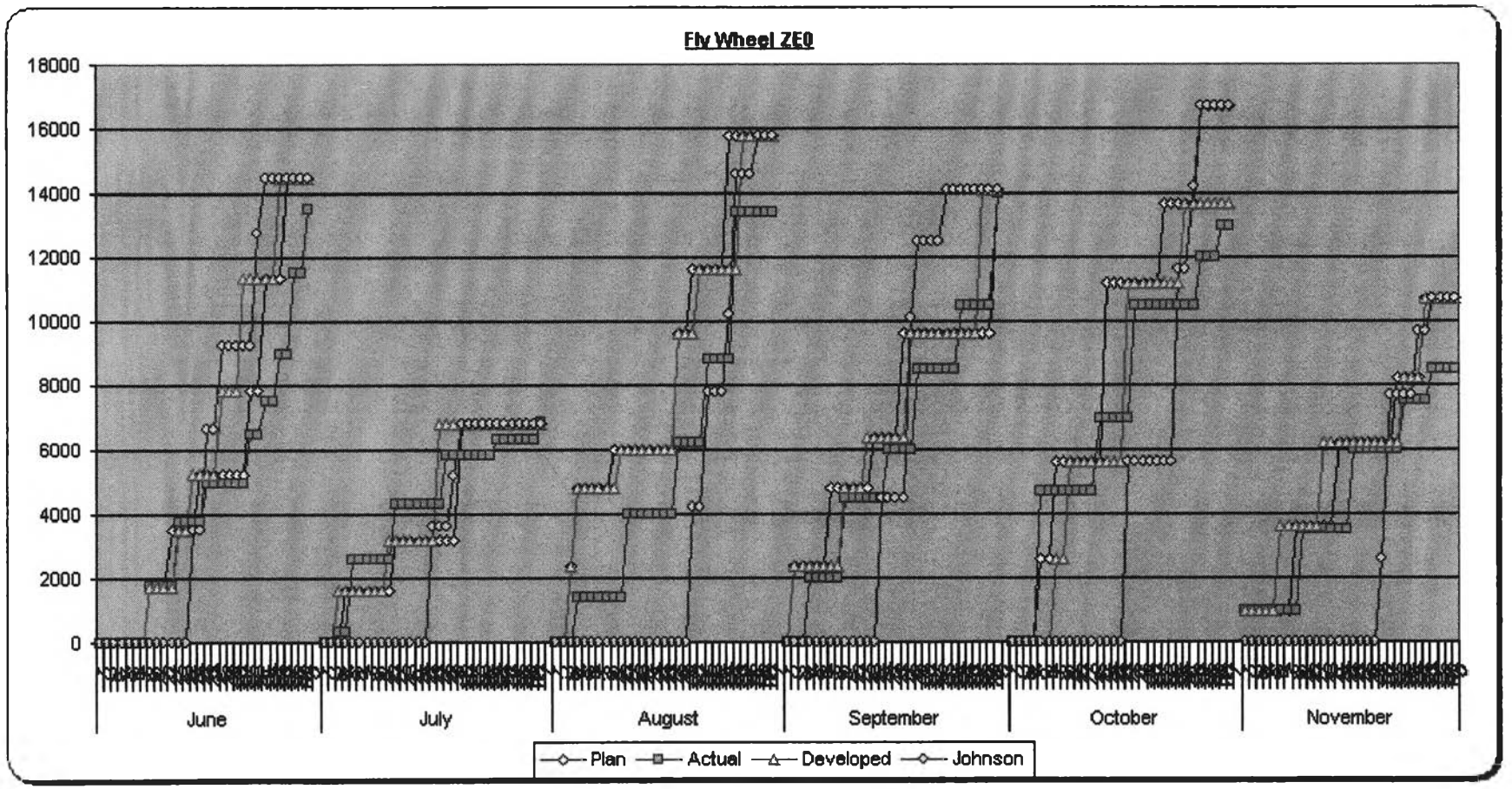

HUB KD
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
June
July
August
September
October
November
Plan
Actual
Developed
Johnson

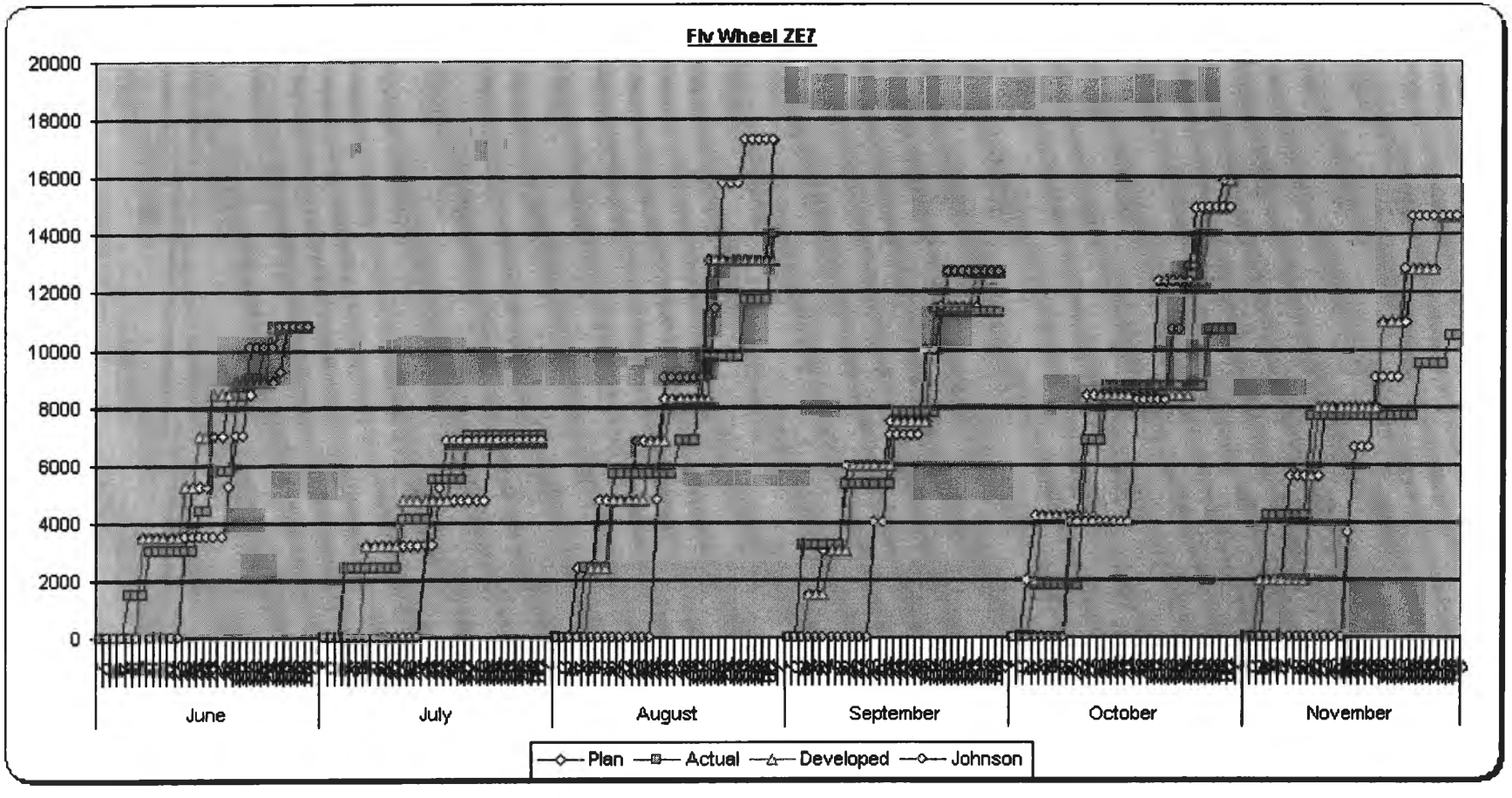

HUB NOK
14000
12000
10000
8000
6000
4000
2000
0
June
July
August
September
October
November
Plan
Actual
Developed
Johnson


Ring NOK
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
June
July
August
September
October
November
Plan
Actual
Developed
Johnson


Fly Wheel ZE1
30000
25000
20000
15000
10000
5000
0
June
July
August
September
October
November
Plan
Actual
Developed
Johnson


Ring
7000
6000
5000
4000
3000
2000
1000
0
June
July
August
September
October
November
Plan
Actual
Developed
Johnson


Fly Wheel ZE0
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
June
July
August
September
October
November
Plan
Actual
Developed
Johnson


Flv Wheel ZE7
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
June
July
August
September
October
November
Plan
Actual
Developed
Johnson

APPENDIX B

The Scheduling Plan

June

	Part Name	QTY	Total	1	2	3	4	6	6	7	8	9	10	11	12	13	14	16	16	17	18	19	20	21	22	23	24	26	26	27	28	29	30	31
1	HUB P-CAR 02	Plan	7500				1800			300				2200								1800						1200				600		
		Actual	5700					1700			400					1400						1200							800				200	
		Developed	7900				1800			300		2200							1800							1200								
		Johnson	7900	1800	1800	1800		2200																					300					
2	Proton 4G	Plan	9400			1500									1500												4500				2000			
		Actual	9400				500							1800										1500		1000		2700			1500		800	
		Developed	9400		1500										1500									4500						2000				
		Johnson	9400		1500	1500			2000			1500																						
3	HUB KD	Plan	12300	600					1800			1800					1800					2400								4200		600		
		Actual	12100	600					2600				1700			1900							1800			2000				1600			
		Developed	12300	600					1800		1800					1800			2400								4200		600				
		Johnson	12300	1700			3500	1800	2400		4200																						
4	HUB NOK	Plan	3600				300						1800						1800														
		Actual	3600				600							1400								1000						720					
		Developed	3600				300					1800						1800															
		Johnson	3900																						3600				300				
5	Ring NOK	Plan	3198		796																				2400								
		Actual	3198		400	798										800						400						1800					
		Developed	3196	796																2400													
		Johnson	3196																								2400		796				
6	Ring	Plan	3000											1000				1000						1000										
		Actual	3100												1200				600						700	200			600					
		Developed	3000												1000		1800			1000													
		Johnson	3000																									3000					
7	Fly wheel ZE0	Plan	14500								1750			1760				1750								2600		3600			3150			
		Actual	13500								1800				2000					1200						1600		1000		1500		2600		2000
		Developed	14500								1750				1750		1750					2600			3900				3150				
		Johnson	14500														3500		3150			2600				3500	1730						
8	Fly wheel ZE7	Plan	10830						3500								1750				1750		1480			400			350	1800			
		Actual	10815					1570		1410									1400		1498			3800		810	1000	810						
		Developed	10830						3500							1750		1750			1480			800				1950						
		Johnson	10830													1730					1730		1730		3800				750				
9	Fly wheel ZE1	Plan	22950		1000		2500	2500	2700						5200				1750						6400							1900		
		Actual	24200	1600				3000	2500			2000						2700				3600					3000				4600		500	
		Developed	22950	1000		2500	2000	2700						5200			1750									5400				1900			
		Johnson	23050											5400	5200			2700	2500	2500		4900	1750					1000					

July

	Part Name	QTY	Total	1	2	3	4	6	6	7	8	9	10	11	12	13	14	16	16	17	18	19	20	21	22	23	24	26	26	27	28	29	30	31
1	HUB P-CAR 02	Plan	4750		1050							1400				500									600					1000				
		Actual	4500			700							1400	600			500										500			600	400			
		Developed	4750	1850							1400		500								800			1000										
		Johnson	4750	2700	2400																													
2	Proton 4P	Plan	7000				1500		1500														500	500					3000					
		Actual	7670		800			800		1400			2000						1600				670		900									
		Developed	7000			1500			1500										500	500				3000										
		Johnson	7000		1500	1500			3000																1000									
3	HUB KD	Plan	11100						3600									2700									2700							2100
		Actual	11800						3000						1700							1600			600		1600			2000			1600
		Developed	11100						3600					2700								2700						2100						
		Johnson	11100			2100	2700	2700		3600																								
4	HUB NOK	Plan	8000			1000					2000									1800						500				1500			
		Actual	8050							800				1500				1250		900						1000				500			
		Developed	8000		1000						2000			1000							500			1500									
		Johnson	8000																		2000	1500	2000	500									
5	Ring NOK	Plan	4900	500				1000								1300								800				1100					300	
		Actual	4700			1000				600										1200				1000					1000					
		Developed	4900	500				1800					1300							800	1000							300						
		Johnson	4900																						3300	1680								
6	Ring	Plan	3700				800					1000					1400												700					
		Actual	4000			600					800						600			600				600		800			800		600			
		Developed	3700			200					1000		1100										700											
		Johnson	3700																					1500	1000	1200								
7	Fly wheel ZE0	Plan	6800				1800							1800										3800										
		Actual	5850			300		2300						1700								1550						500						500
		Developed	6800			1600							1600							3600														
		Johnson	6800																3200			1700	1800											
8	Fly wheel ZE7	Plan	6800							3200									1800									2000						
		Actual	7000				2400								1700				1800						1400									
		Developed	6800							3200					1600							2000												
		Johnson	6800															3200		2000	1600													
9	Fly wheel ZE1	Plan	24200			1600		3200					3200							7600											6800			
		Actual	25450		1750			2100			3600				2000					3800					4200				3200					4900
		Developed	24200		1600			3200				3200							7600								8600							
		Johnson	24200											8600		7600	3200		3200		1600													

August	Part Name	QTY	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	HUB P-CAR 00	Plan	8500			1500			1500												2000			2000						1500				
		Actual	8060						600		1500					650					800				300	1500			1000			1800			
		Developed	8500				1500			1500											2000			2000									1500	
		Johnson	8500		4500		2000	2000																										
2	Protem 4G	Plan	12000		800		1800		1800						2500							3000										2500		
		Actual	11800						400		1000			1400	500			1500	1500		2000		1000								2500			
		Developed	12400			800		1600		1600								2500				3000												2500
		Johnson	12800	800		1600	1600		2500	2500		3000																						
3	HUB KD	Plan	11000		1000		1600						3000										3000						2500					
		Actual	11460						2300						2800						2200					1850					2300			
		Developed	11800		1000				1500					3000									3000								2500			
		Johnson	11800	1000		1500				2500	3000		3000																				
4	HUB NOK	Plan	8300	1200						1200						1200					500				1200					600			500	
		Actual	8260	1200					1200									1200		600				1000				650			600			
		Developed	5800	1200								1200						1200			500								1200					500
		Johnson	6300																												3600	1200		500	1000
5	Ring NOK	Plan	6400					1000				1800						1100			700			1000								800			
		Actual	6300					1000				1500			400				200	1100		500				1000						800		
		Developed	6480						1000				1800						1100		700								1000					800
		Johnson	6400																												1800	2100	1000	1500
6	Ring	Plan	6400		500				800					700					1000							1600					900			
		Actual	4800				600				600			600		500				600		600			600			600		600		300		
		Developed	4500		500					800						700				1000										1500				
		Johnson	6900																													1500	1900	1500
7	Fly wheel ZE0	Plan	16800			2400	2400					1200									3600		2000					4200						
		Actual	13400				1400							2600							2200				2600					4800				
		Developed	15800			2400	2400						1200								3600			2000					4200					
		Johnson	15800																				4200		3600			2400	4400		1200			
8	Fly wheel ZE7	Plan	17900				2400			2400					2000					1500					4800									4000
		Actual	14000					2400				2000									1100			2900						2000			2300
		Developed	13100						2400			2400					2800				1500					4800								
		Johnson	17300																4800	4200						2400	4400			1500				
9	Fly wheel ZE1	Plan	26200		2000					3000				4000			4000					5400								5600				
		Actual	21700						600					2800			2800					2800			2000			2600			5200		2000	900
		Developed	25200		2000						3200					4800				4000									6400				5600	
		Johnson	25200					2800							6400		5600					4000	4000		3200									

September	Part Name	QTY	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	HUB P-CAR 00	Plan	8400					1600		1800								3000									1600							
		Actual	8060						1100		600		1000				1000					2000				2000				600				
		Developed	8400							1600	1600									3000						1800								
		Johnson	8460			3600	1800	3000																										
2	Protem 4G	Plan	10000				1500						3000												2000				3500					
		Actual	9800					1500										3000								1600		600			3000			
		Developed	10000				1500								3000										2000		3500							
		Johnson	10000		1500		2000		3000		3500																							
3	HUB KD	Plan	9800			1200			1200		3000									3000					1200									
		Actual	9800		2400						2800			1800						2800					200									
		Developed	9600			2400						3000									3000				1200									
		Johnson	9600	2400	1200				3000	3000																								
4	HUB NOK	Plan	7800		1000							1200									1800		1200				1200					1200		
		Actual	7300					1000													1800				1500				2000				1000	
		Developed	7680		1000									1200								1800	1200			1200				1200					
		Johnson	7680																			1800				1200	3600	1000						
5	Ring NOK	Plan	6000	700				1000								800						900				2300					1200			
		Actual	6300			600				1000							600							600				1200		1500			1000	
		Developed	6200	700					1000						600							900			2300					1200				
		Johnson	6200																						2300				2200	900	1300			
6	Ring	Plan	4100			500					700				800										900				700			500		
		Actual	3800				600						700					800							900						700			
		Developed	4100			500					700				800										900		700			500				
		Johnson	4100																										2400	1700				
7	Fly wheel ZE0	Plan	14100		2400					2400						1600			1500		3200												4500	
		Actual	14000				2000					2500										2500						2000					3500	
		Developed	14100		2400							2400			1600						3200										4500			
		Johnson	14100														4500				5600	2400			1600									
8	Fly wheel ZE7	Plan	12700				1500		1500			3000							1500						4000						1200			
		Actual	11300			3200						2100								2800						3600								
		Developed	12700				1500			1500			3000							1500					4000					1200				
		Johnson	12700													4000			3000				3000		1500	1200								
9	Fly wheel ZE1	Plan	23600		1000	1600		3000	1600	3000									6000				3000									4800		
		Actual	22200			3000				4300				6800					3200				1800					4300						
		Developed	20800		1000			3000	3000										6000			3000							4500					
		Johnson	20900										6000		4500				3000		3000				3000				1000					

October	Part Name	QTY	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	HUB P.CAR 02	Plan	7400		1200						1500					1600					2000			1200										
		Actual	7600				1000						600			1000			1000			1600			1000				1500					
		Developed	7400	1200							1900							1900						2000			1200							
		Johnson	7400	1200	3700	3500																												
2	Preform 40	Plan	12500			2500				2900					2500												2500					2500		
		Actual	3600						2500			3000													1400									
		Developed	12500		7500						2300						7300															2500		
		Johnson	13500				2500	3000	2300	2500																								
3	HUB KD	Plan	16000	800			1200								3000							3600									3800			
		Actual	13000	650	1200													2200					2800						3400			3000		
		Developed	8400	600			1200										3800								3000									
		Johnson	14500	600	1200					3000	3800				6800																			
4	HUB NOK	Plan	11000			1200			1600				1800						2000					1650					1600			1200		
		Actual	8000						1600								1600				1600				1000				1500			1000		
		Developed	11000			1200				1500				1800					2300								1000				1500	1200		
		Johnson	6800																											3800	3300	1500	1200	
5	Ring NOK	Plan	2200		1000						1000						1200						1800					2000				2300		
		Actual	5100					500		900			500					1000										1500			700			1000
		Developed	7000	1000							1000							1200								1000					2000			
		Johnson	4700																															
6	Ring	Plan	2800			700						1500						2000						900							1900			
		Actual	5700				600							1600					2000							600					1200			
		Developed	6600			700						1500						2000								000					1500			
		Johnson	3600																														2000	
7	Fly wheel ZE0	Plan	16700					2600		3000							3000								2300					3000				
		Actual	13000					4700								2300						3000								1800			1000	
		Developed	13700							2600		3000								5600								2300						
		Johnson	16700																	3000							3000		2800	2300				
8	Fly wheel ZE7	Plan	16800			2000	2200							4200										4000					2500			1000		
		Actual	10700				1800							3400			1900													2000				
		Developed	15800				2000	2200								4200													4000		2300			1000
		Johnson	14900								4000										4200					2300		2700		2800				
9	Fly wheel ZE1	Plan	25700					3500					3700								2000		2000				2500			4000				
		Actual	12600																		3000				4000						6300			
		Developed	13600						3500					3200										7000		2300				2800				
		Johnson	25200														7000		5600			3200	3500	2900	2800									

November	Part Name	QTY	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	HUB P.CAR 02	Plan	5600	1000					600						1500								1500								700			
		Actual	6000			1000				900							1500				1000						1000							
		Developed	5500	1000				800						1500									1500								700				
		Johnson	5600	2500	1900																								1300					
2	Preform 40	Plan	12500					2500					2400					2500						2500				2500							
		Actual	6000				2400							2300									1500			1600					1600			
		Developed	13500					2500			2500					2500								2500				2500							
		Johnson	12500				2500	2500	5000	2500																									
3	HUB KD	Plan	15700			1800						1800				6000									1800				1900			2800		
		Actual	12200				1600				1700			2400				4800		1800														
		Developed	15700			1800				1800								6000							1800			1500				2800		
		Johnson	15700		1500	3600	1800				2800		6000																						
4	HUB NOK	Plan	12800		1500					1200				1800					3000					1000						4000				
		Actual	10000			1000					1500			1900								1500		1500					1500				2000		
		Developed	12500		1500			1200				1800							2300					1000						4000				
		Johnson	12500														4000			3300							1800	2700		1000				
5	Ring NOK	Plan	5000				1000						1000					1000								1000						1000		
		Actual	3900											1100			1000					1000					800							
		Developed	5000				1000				1000				1000											1000					1000				
		Johnson	5000																												4000	1000		
6	Ring	Plan	6400			700					1800						900					900				1300				800				
		Actual	6400			600						1800						700				1000				1200					600			
		Developed	6400				700			1800					900							900				1300			800					
		Johnson	6400																										1800	1300		2800	700	
7	Fly wheel ZE0	Plan	10700	1000							2600						2000								2000				2300					
		Actual	9800	1000								2900							2900					1500					1000					
		Developed	10700	1000					2600						2600									2700				2500						
		Johnson	10700																				2800	5100				2800		1800				
8	Fly wheel ZE7	Plan	14600			3000				3800					2400								3700				1800				1800			
		Actual	12600				4200						3300															1800				1000			
		Developed	14600			3000							3600	2400									3000			1700					1800			
		Johnson	14200															3600	3300			2400				2300	1800							
9	Fly wheel ZE1	Plan	19500		1000						2000									7000				2700				2700				4200		
		Actual	15800				2400			1060				1750				3160									1000			1600				
		Developed	15400		1000				2000													4700			2700		2700							
		Johnson	19600												7000	4200					2750	4700				2000			1800					

BIOGRAPHY

Ms. Yanee Dolruedej has a B.Eng. from King Mongkut's Institute of Technology Ladkrabang in Control Engineering. She started her carrier in Hard Drive Manufacturing as a test engineer, failure analysis engineer, and product engineer. After three year working, she decided to continue her study in Engineering Management and Manufacturing jointly offered by Chulalongkorn University and Warwick at the Regional Centre for Manufacturing Systems Engineering. She was enrolled as a part-time student and graduated in the academic year 2004. Now, as a product engineer, she has been transferred to work in California focusing on new product design.