CASE STUDY: TOY AIRPLANE MANUFACTURING

A toy company produces three types (A,B,C) of toy aluminum airplanes in the following daily volumes:A=1000, B=1500, C=1800. All planes go through five operations(10 through 50) except for plane A, which skips operation 40. Following is a list of operation times, move times and resources used:

Ор	Description	Operation time	Resource	Move time to next	Movement
no.				operation	resource
10	Die casting	3 min.(outputs 6 part)	Automated	3 min	Mover
20	Cutting	Triangular(.25,.28,.35)	Cutter	none	
30	Grinding	Sample	Grinder	2 min	Mover
		times:.23,.22,.26,.22,.			
		25,.23,.24,.22,.21,.23,.			
		20,.23,.22.,25.,.23,.24,			
		.23,.25,.47,.23,.25,.21,			
		.24,.22,.26,.23,.25,.24,			
		.22,.24,.26			
40	Coating	12 min.per batch of	Coater	2 min	Mover
		24			
50	Inspection	Triangular(.27,.30,.40)	Packager	To exit with 88% yield	
	and				
	packaging				

After die casting, planes are moved to each operation in batch sizes of 24. The factory operates eight hours a day, five days a week. The die caster experiences downtimes every 30 minutes exponentially distributed and takes 8 minutes normally distributed with a standard deviation of 2 minutes to repair.