Baytheon

Baytheon has received an order to supply 2 guided missiles. In order to meet stringent quality requirements, the company may have to manufacture more than one missile to obtain an missile that is acceptable. The company has time to make no more than 3 production runs, and at most 2 missiles can be produced in each run. The probability distribution of acceptable missiles in a given run depends on how many missiles are produced:

	Probability of acceptable missiles		
Number of missiles produced	0	1	2
0	1	0	0
1	1/3	2/3	0
2	1/4	1/2	1/4

Each missile costs $100,000 to produce, and excess missiles are worthless. In addition, a setup cost of $50,000 must be incurred whenever the production process is setup for this item. If 2 acceptable missiles have not been obtained by the end of the third production run, Baytheon is in breach of contract and must pay a penalty of $25,000. The objective is to determine how many missiles to produce in each production run in order to minimize the total expected cost.

Formulate this problem as a stochastic dynamic program.