Problem

P (Target in Cell $_i$ |Observations up to time t $\wedge$ Failure in Cell j)

= P(Target in Cell i and obs up to time t and failure in cell j) / P(obs upto time t and failure in cell j)

= P(Observations up to time t) * P(target in cell i | Obs up to time t) * P(failure in cell j | target in cell I, obs up to time t) / [P(obs up to t) * P(obs up to time t | failure in cell j)]

P(observation till time t not needed.)

= P(target in cell i | obs up to t) * P(fail in cell j | target in cell i) / P [(obs up to time t | failure in cell j)]

= B{in cell I} at t * FNR / Normalization Factor.

For j != i: P(Failure in Cell j | Target in Cell i) = 1

For j == i: P(Failure in Cell j | Target in Cell i) = FNR

Problem 2

P (Target found in Celli | Observations t)

P(Target is in Cell i $\wedge$ Success in Cell i | Observations t)
P(Success in Cell i) * P(Target is in Cell i | Observations t)
(1 - FNR(terrain)) * Belief [Cell i]