David Schirduan 9-8-11
CSCI 362 Bowring

HW 7
ex 12.5, 12.6, 12.7

12.5) Reliability Metrics

Hospital ICU

POFOD - .00001 Failure of an ICU should be avoided at all costs. Even a small down-time can cause irreparable damage
ROCOF – once every week or so should be the goal. Perfection isn't possible, but failures can result in mistakes.
AVAIL - .9999 – The ICU needs to be ready at a moments notice

Word Processor

POFOD - .01 This could be supplemented by an auto-save feature
ROCOF – once every few hours is reasonable
AVAIL - .99 Word processors should load quickly and be available when needed

Vending Machine

POFOD - .001 Failure could result in a loss of revenue for the company
ROCOF – Once every day is acceptable, since they are heavily used throughout the day.
AVAIL - .99 The machines should be available 24-hrs, since that's the whole point of vending machines

Braking System

POFOD - .0001 – a failure in the brakes could be fatal
ROCOF – once every few weeks since brakes should not fail often
AVAIL - .9999 – Brakes go through long periods of stagnation, and need to be usable at a moments notice

Refrigeration unit

POFOD - .01 – failure isn't a big deal, since a well-insulated fridge can go for several hours without any loss of cold.
ROCOF – once every few days is a good goal, since it will probably be constantly active for a long time
AVAIL - .9 It probably will be started up once, and then left on

Report Generator

POFOD - .01 – failure of that type of system will only delay reports, which usually aren't needed ASAP
ROCOF – once a day would not be too large of a problem with a low-priority system
AVAIL - .99 – waiting a few minutes for the generator to boot-up is acceptable in the workplace

12.6)

Train Protection System

POFOD - .00001 – Failure of the train braking system could prove fatal to the passengers inside
ROCOF – once a month or so – even one failure can result in many deaths
AVAIL - .9999 The braking system should be able to activate instantly, to avoid damage.

12.7) Functional System Requirements

- a system to detect the activation of red lights along the track
- a system that can determine the “speed limit” for different sets of tracks
- System to alert the driver of the “speed limit” or to override and decrease speed when necessary
- System to alert the driver of an incoming red light, or override if necessary
- System to calculate the distance, and activate the brakes and reduce speed before it is too late.