ACTIVITY
21 Exploring a Controller Emulator

DISCOVERY

Purpose

The purpose of this activity is to improve your understanding of the operation of an actuated traffic controller system by studying a traffic controller emulator.

Learning Objective

- Describe actuated traffic controller timing processes

Required Resource

- Spreadsheet file: A21.xlsm

Deliverable

- Prepare a document that includes a brief summary of what you've learned from studying the controller emulator, including answers to the Critical Thinking Questions

Information

You will use an Excel spreadsheet emulator to learn more about the operation of an actuated traffic signal controller. The spreadsheet (Figure 86) shows two intersecting one-way streets, a detector for each street, and the timers that are activated when a detector call has been initiated. The detection type is pulse, which means that the call is made and is not held after each actuation.

Critical Thinking Questions

1. How and when do the phases terminate when no detector calls have been placed?

2. When calls are placed continuously only on the NB approach, how and when does the northbound phase terminate?

3. When calls are placed continuously on both the northbound and westbound approaches, how and when does the northbound phase terminate?

4. How does pulse detection differ from presence detection and how does this difference affect the timing processes that you see in this controller emulator?

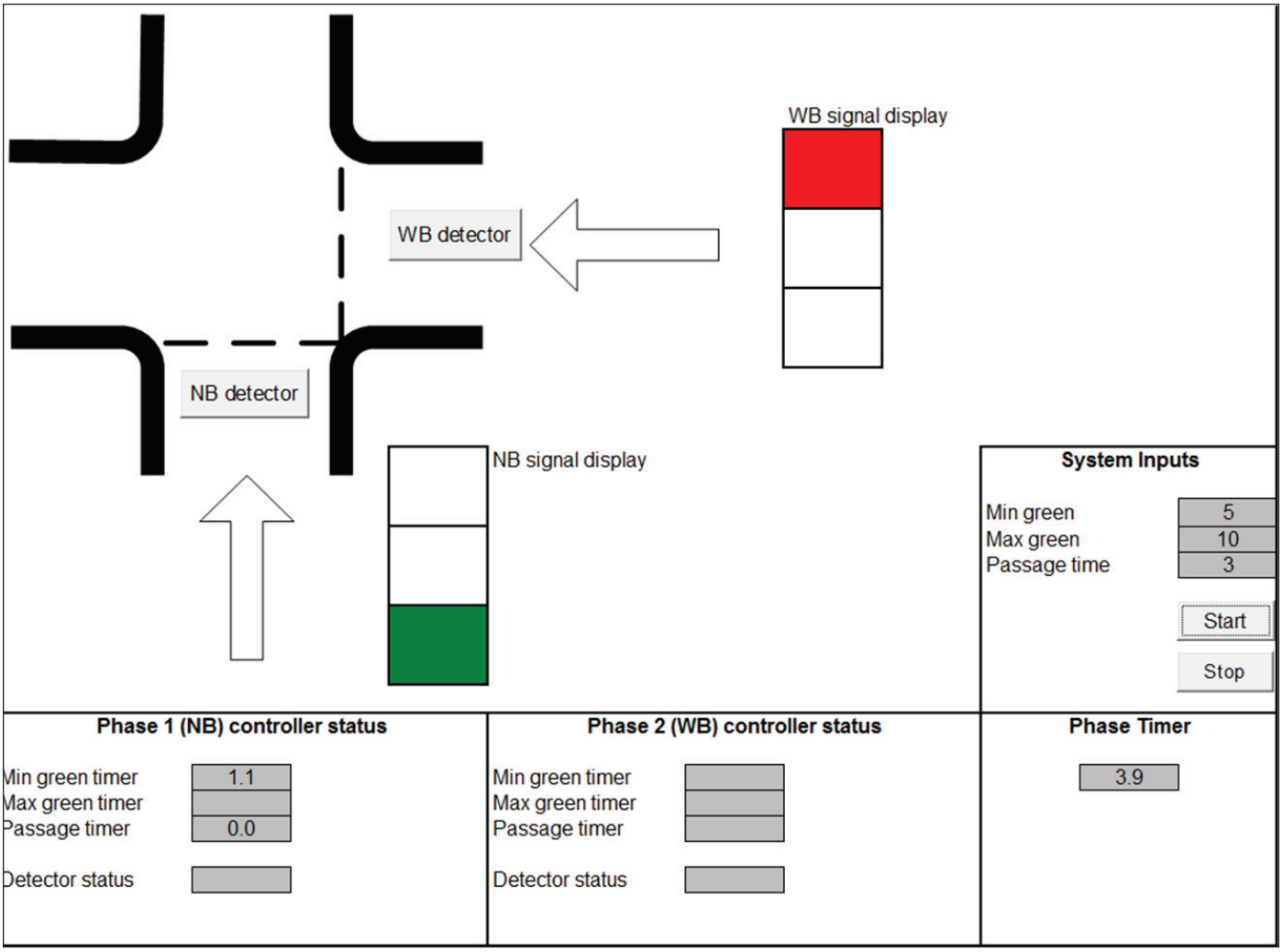

Figure 86. Spreadsheet controller emulator

TASK 1

Run the Excel emulator without any detector calls. When and how do the phases terminate?

TASK 2

Run the Excel emulator placing continuous calls only on the northbound approach. How long does the northbound phase run and why does it terminate?

TASK 3

Run the Excel emulator placing continuous calls on both the northbound and westbound approaches. How long does the northbound phase run and how does it terminate?