Activity #19: The ASC/3 Traffic Controller (Discovery)

Purpose

The purpose of this activity is to give you the opportunity to learn more about the operation of an actuated traffic controller.

Learning Objectives

- Describe the range of information provided by the ASC/3 controller.
- Describe the effect of detector calls on controller timing processes.

Required Resource

- Movie file: A19.mp4.

Deliverable

- Prepare a document that includes your answers to the Critical Thinking Questions.

Critical Thinking Questions

As you begin this activity, consider the following questions. You will come back to these questions once you have completed the activity.

1. What are examples of the data provided in the controller status display screen?

2. How many rings can be accommodated by the ASC/3 controller?

3. How do you know whether a gap out or a max out has occurred?

4. How can you verify that a vehicle call has been placed?

5. Describe some of the observations that you have made on the response of the controller timing processes to vehicle calls.

Information

There are a number of traffic controllers that are in common use today, including those manufactured by McCain, Siemens, Peek, Naztec, and Econolite. There are three primary types, Type 170 and 2070 controllers, NEMA controllers, and advanced traffic controllers (ATC). In this activity, you will discover (explore) a NEMA controller produced by Econolite known as the ASC/3.

The features and functions of the ASC/3 are not dramatically different from other actuated traffic controllers. Using the ASC/3 controller emulator, including its functionality and the kinds of information that it displays, will help you to understand more about traffic signal timing and the controller processes that determine how effective a timing plan will be. While other types of controllers are used in this book, the ASC/3 controller emulator provides a transparent way to learn more about traffic controllers in general.

The video that you will watch as a part of this activity shows the ASC/3 controller in operation (see Figure 1). The left portion of Figure 1 shows the display for a tool that is commonly used to test the functions of a traffic controller known as a "suitcase tester." This tester derives its name because it is often stored in a suitcase box for easy portability. The display status for each vehicle phase is shown at the top of the screen (green, yellow, red). In this example, phase 2 is currently green while the other phases display red. Detector calls can be placed by clicking on the boxes at the bottom of the left portion of the screen (where the cursor is shown in the figure).

The right portion of the figure shows the status display screen for an ASC/3 controller, as you would see it in the lab or in the field. For each phase, you can see the phase status and the presence (or not) of a vehicle call. Phase 2 is currently active ("G" for green). You can also observe the status for various timers for rings 1 and 2, and as well as the phase that is currently active. Here, phase 2 is timing in ring 1 and the vehicle extension timer (EXT1) is at 2.8 seconds. The maximum green timer (MAX1) is at zero.
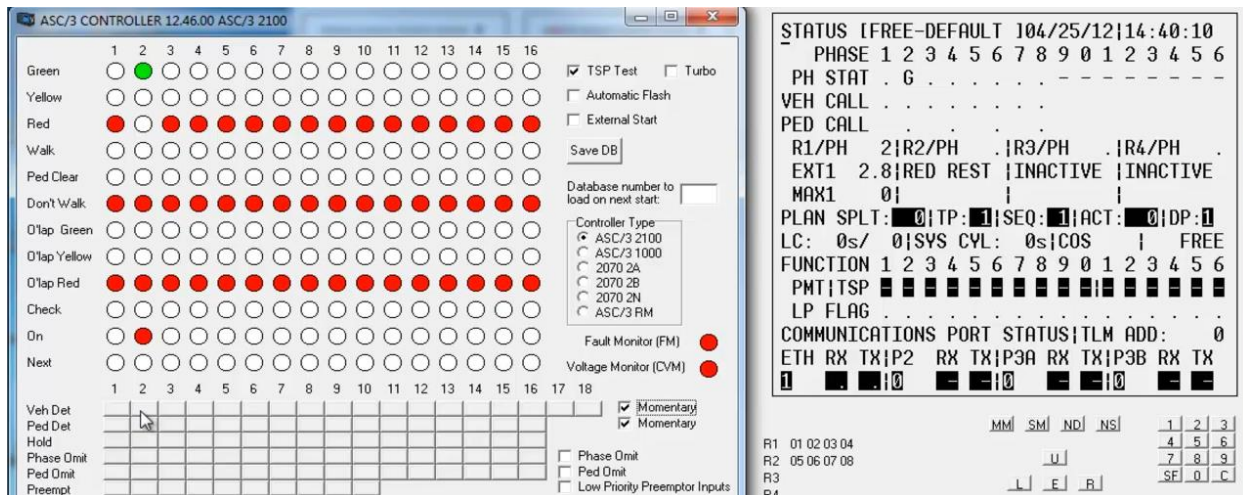

Figure 1. ASC/3 controller

Tasks:

Task 1: Open the movie file A19.mp4. Watch it from the beginning through t = 0:55. Familiarize yourself with both the suitcase tester display (on the left portion of the video screen) and the controller status display screen (on the right side of the video screen). Take notes on what you observe and record these notes in Table 1.

Task 2: The video from t = 0:58 to t = 2:30 shows a series of actions (detector calls placed) and responses (timing process changes). For the first part of this segment (0:58 – 1:12) constant calls are placed on phases 2, 4, 6, and 8. For the second part (1:13 – 1:20), there are responses to these calls. Take notes on the responses that you observe.

Task 3: From t = 2:40 to t = 5:00, there are a series of detector calls placed and controller responses that result. Closely observe the four segments in this time interval and record the controller responses that you observe in Table 1.

Task 4: Document your answers to the Critical Thinking Questions.

Table 1. ASC/3 controller observations

Video time interval	Detector calls	Controller responses/other notes
0:00 – 0:55		
0:58 – 1:12		
1:13 – 1:20		
2:40 – 3:00	Call on phase 2 at t = 2:55	
3:15 – 3:30	Calls on phases 4 and 8 at t = 3:21 – 3:23	
3:30 – 3:40	Call on phase 2 at t = 3:37	
3:40 – 4:40	Calls on phases 2, 4, and 6 between t = 3:46 and 4:35	