Name: Jafer Hussein

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Section: 1

Scenario: there is a large bridge positioned over the sea, and ships frequently navigate through the water. When a ship approaches the bridge and intends to pass, the bridge's embedded control system is responsible for managing the opening process to allow the ship to pass without any obstacles.

The System can efficiently open the bridge and enable the ship to pass within a time frame of 10 seconds. This configuration result in the utilization factor being one. So the question is what will happen if the time frame of the system is decreased to 5 seconds or it is increased to 15 seconds.

Time frame of 5 seconds: When the time frame is reduced to 5 seconds, the bridge control system needs to open the bridge and let the ship pass within a shorter time frame. To meet this requirement, the system may need to operate at a higher speed or optimize its mechanisms. Failing to open the bridge within 5 seconds could result in delays for the ship or even collisions if the bridge is not fully open when the ship approaches.

Time frame of 15 seconds: On the other hand, when the time frame is increased to 15 seconds, the bridge control system has more time to open the bridge and allow the ship to pass smoothly. The extended time frame provides a buffer for the system to handle any potential delays or variations in the opening process. This relaxed operation reduces the time pressure on the system and facilitates smoother bridge operations.