Assignment #3 – Template

Software Requirements Specification

Revision History

Date	Revision	Description	Author
mm/dd/yyyy	1.0	Initial Version	Your Name

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1. Purpose

This document outlines the requirements for the Mine Pump Control System (MPC).

1.1. Scope

This document will catalog the user, system, and hardware requirements for the MPC system. It will not, however, document how these requirements will be implemented.

1.2. Definitions, Acronyms, Abbreviations

1.3. References

- **Use Case Specification.docx**
- **Use Case Diagrams.docx**
- **Class Diagrams.docx**
- **Sequence Diagrams.docx**

1.4. Overview

The Mine Pump Control System (MPC), is designed to monitor and pump flood water out of mine shafts. As underground mining operations take place far below the water table, flooding into mine galleries and shafts is an ever-present danger.

2. Overall Description

2.1. Product Perspective

2.2. Product Architecture

The system will be organized into _ 3__ major modules: the _Turn Pump ON__ module, the _Turn Pump OFF__ module, and the __Reset System___ module.

2.3. Product Functionality/Features

The high-level features of the system are as follows (see section 3 of this document for more detailed requirements that address these features):

2.4. Constraints

1. The log in application is to be the only tool accessible to access the System.
2. The user is limited to entering a username and a password to the System.
3. The user cannot attempt login without filling out both username and password fields.
4. The only the chosen system application will give entry to access the system.
5. The system cannot allow account inactivity for more than 5 minutes.
6. The system will not allow more than 7 account log ins to access the functionality and change it within an half an hour time period.
7. The System shall not allow any unauthorized external devices to connect to the system.

2.5. Assumptions and Dependencies

1. It is assumed that only one actor can manage the pump at a time.
2. It's assumed the System is in charge of all pumps present.
3. It's assumed all users are recorded to a database.
4. It's assumed the system has multiple physical user interfaces to log on to.
5. It's assumed that the system accounts for total number of users for each class.
6. It's assumed each user is assigned unique identification.
7. It's assumed that the System is available to be used 24/7, throughout the opening duration.
8. It's assumed the System has a live feed connected to the pumps and sensors.
9. Its assumed the pumps run on solar energy.

3. Specific Requirements

3.1. Functional Requirements

3.1.1. Common Requirements:

3.1.1.1. The selected users are all required to log in, with correct username and password credentials, before accessing the functionalities of the System.

3.1.1.2. All accessible functions to each user, shall be clearly defined and their uses explained.

3.1.1.3. There should be some connection between the System and the pump.

3.1.1.4. The System and pump must communicate with each other, able to send information across both ends to maximize whole system.

3.1.1.5. There should be a link between the sensors and the control system, to pass information about water levels.

3.1.1.6. The System should be connected to live feed from the pump, to the sensors, about all information to keep everything in the system current.

3.1.1.7. The System must provide the current state of the pumps and water levels.

3.1.1.8. The System should contain a log recording for each use of each functionality

3.1.2. __ Turn Pump ON ___ Module Requirements:

3.1.2.1 The System must supply the necessary controls to the Supervisor and Operator to turn the pump on.

3.1.2.2 The System must have a limit on high water level that allows the pump to be activated.

3.1.2.3 The System must grant Supervisor extra privilege to turn pump on past high water level limit.

3.1.2.4 The System must grant the Operator the access to turn the pump on between the high and low water level limits.

3.1.2.5 The System must constantly be reading the water levels from the high water level sensor.

3.1.2.6 The System must only give access of this action to the Supervisor and Operator.

3.1.2.7 This functionality cannot be activated when the pumps are already on.

3.1.2.8 Clicking a button activates the functionality.

3.1.3. __ Turn Pump OFF ___ Module Requirements:

3.1.3.1. The System must have a limit on low water level that allows the pump to be turned off.

3.1.3.2. The pump must be turned on beforehand, or else, the off mode won't be available to be activated.

3.1.3.3. The System must supply the necessary controls to the Supervisor and Operator to turn the pump off.

3.1.3.4. The System must implement an instruction to communicate from the control system to turn the pumps off.

3.1.3.5. The System should allow a short duration before automatically, shutting the pumps off.

3.1.3.6. The System should notify the Users that the Pumps have stopped.

3.1.3.7. Tapping a button activates the functionality.

3.1.4. ___ Reset System__ Module Requirements:

3.1.4.1. The Supervisor account should include links to activate the reset function.

3.1.4.2. The Reset Functionality should only by supported by Supervisor accounts.

3.1.4.3. A strict alert should be imposed upon the system that only allows a supervisor to log in and activate reset; right after a Supervisor overrides the System.

3.1.4.4. The reset functionality should return the System to normal, automatic behavior.

3.1.4.5. The reset functionality should only be available right after the Supervisor has overridden the System.

3.1.4.6. This functionality works for on and off overrides.

3.1.4.7. Sliding a slider enacts this functionality.

3.2. External Interface Requirements

3.2.1 The System must provide an interface for the "turning the pump on " functionality, for the Supervisor and the Operator. Also, the Supervisor should have an additional extended interface that allows the Supervisor to use the functionality outside the limits.

3.2.2 The System must provide an interface for the "turning the pump off " functionality, for the Supervisor and the Operator. Also, the Supervisor should have an additional extended interface that allows the Supervisor to use the functionality outside the limits.

3.2.3 The System must provide an interface for the "resetting the system " functionality, for the Supervisor only.

3.3. Internal Interface Requirements

3.3.1. The System must process a data-feed from the pumps in which the Supervisor and Operator's usage of the "turn pump on" functionality is recorded, within the account of the Supervisor or Operator.

3.3.2. The System must process a data-feed using the pumps, in which the Supervisor and Operator's usage of the " turn pump off" is recorded, within the account of the Supervisor or Operator.

3.3.3. The System must process a data-feed from the pumps in which the Supervisor usage of "reset functionality", is recorded, within the account of the Supervisor.

4. Non-Functional Requirements

4.1. Security and Privacy Requirements

4.1.1. The System must encrypt the user's accounts, usernames, and passwords.

4.1.2. The System must log out the current user, if the account is inactive for 10 minutes or more.

4.1.3. The System must require the users to enter a password that is 10 – 20 characters in length and contain a mixture of letter, numbers, and symbols.

4.1.4. If the user enters a number of incorrect username and password combinations, the System must task the user to provide a form of identification.

4.1.5. The System must display the text on the main log in page to be 14 font.

4.1.6. The System must allow language to be accessible to change, according to the user.

4.2. Environmental Requirements

4.2.1. The System must require that all users must use the same, developed platform.

4.2.2. The System is required to utilize the chosen architecture that's running the system.

4.2.3. The System needs to be running on an operating system that supports multithreading.

4.3. Performance Requirements

4.3.1. The System must utilize a multicore processor.

4.3.2. The System is required to be running the latest hardware.

4.3.3. The System is required to receive user's username and password, and fetch that account in minimal time possible.

4.3.4. The System must have minimal lag time producing the user's account