

Procedure for the pre-operational checks of SSME Normanby Hall railway site apparatus & equipment.

Proc. No O / 007 put in service and operate the station signalling systems.



This procedure should be carried out by a member when operating, a steam locomotive, where train control through the station is required.

Note: This procedure does not override or preclude measures that shall be conducted as specified in any other SSME Normanby Hall railway procedures concerned with the operation or maintenance of the railway. Where a single locomotive or train is being operated, safe operating procedures will always be the responsibility of driver, for the site, locomotive, rolling stock and track system.

Description of the system:

The station is equipped with a stand-alone signalling system introduced to provide increased protection to members operating the station under COVID 19 & normal running conditions.

Starting the signal systems: -

The signal system will self-start when the station & main signal systems 230v power system is switched on (waterproof switched spur on station 3 from the hall side & the red 90-degree operation electrical isolator on the rear of the electrical equipment marshalling cubicles, opposite the SSME hut). The signal system operates at 12 & 24v DC. (24v supply is fed from the main signal system and isolated from the 12v system by interposing relays connected to the loading section **GREEN & AMBER** pushbuttons).

The signal located adjacent to the signal box is controlled from the exit gate point on the station and can be operated in 3 ways:

The signal located adjacent to stanchion 4 in the station is suspended from the roof beams so that it is visible from the sanitisation section of the station and is an **AMBER & RED** signal. This signal operates in 2 ways either under manual control by the person operating the sanitisation section or interlocked with the station release signals controlled in conjunction with the loading sections, where the release from both sanitisation and loading sections is required before the signals can change colour. Selection of the above modes of operation are at the discretion of the Track Marshalls and operated by a key switch at the station.

Principles of operation:

1. The purpose of these signals is to limit station occupancy to a single train in the sanitisation & loading section of the station at any one time.
2. Modes of operation:
 - a. Signal box signal (No 4) Manual - when the centre blue LED is NOT illuminated.
 - b. Signal box signal (No 4) - when the centre blue LED is illuminated.

- c. Signal box signal (No 4) - Auto with manual override when the blue LED is illuminated (in this condition small manual intervention can be carried out without taking the system off automatic control. The system will immediately reset to fully automatic control when the next track sensor is operated by a train.
- d. Sanitisation bay release signal manual release & automatic reset to **RED**.

Station signal system sequence of operation:

- A. A train passes the signal box signal (Signal 4) which sets signal 4 to **RED**.
- B. The train enters the sanitisation bay and stops handbrake applied.
- C. Sanitisation is carried out and once completed & personnel are clear of the train the **GREEN** pushbutton is pressed and remains illuminated. In operating mode one this illuminates the station **AMBER** signal and the train can move forward with caution if the loading section is clear.
- D. The train moves into the loading section and resets the signal to **RED** & signal 4 to **GREEN**.
- E. The next train can pass signal 4 and enter the sanitisation section.
- F. The train in the loading bay can be loaded and dispatched by use of the **GREEN** station release buttons.
- G. The train in the sanitisation bay remains stationary until the GREEN release button is pressed by the sanitisation personnel.
- H. If the key operated interlock switch is set to loading section control the above will only take place when the loader releases a loaded train.
- I. If the loading section has no train to dispatch the **AMBER** pushbutton in the loading section will the train in the sanitisation to advance into the loading section, without setting the station release signal to **GREEN**.

Signal system operating equipment:

1. When a train passes the signal & sensor adjacent to the signal box, the signal sets to **RED**.
2. The train advances into the sanitisation section of the station and stops. The sanitisation process is then carried out, in a safe manner as any train should not move while the process is being carried out, preventing inadvertent contact that may cause injury to the sanitisation teams body parts.
3. The person who is supervising the sanitisation procedure then presses the train release button (**GREEN** button on stanchion 2, which remains illuminated until the signal automatically resets to **RED**) which operates the release of the train, to move forward under caution into the loading bay. This release signal is an **AMBER** signal signifying the next signal could be at **RED** and the train should move forward cautiously.
4. As the train passes from the station sanitisation section to loading section, a track mounted sensor sets the signal box signal to **GREEN**, allowing the next train waiting on the track to move into the sanitisation section of the station.
5. The station sanitisation section to loading section has two sensors and the second sensor will set the sanitisation section release signal back to **RED** and extinguish the sanitisation section release button **GREEN** LED preventing a train from moving out from the sanitisation section. Both sensors operate on the same vertical axis.
6. A second mode of control is available for operation of the sanitisation signal by selecting the Key switch, to position 2. This transfers release of all trains in the station into the control

of the loader. This is controlled by the **AMBER** or **GREEN** push buttons in the loading area of the station. The sanitisation section release signal now becomes interlocked with the station release signal. In this mode of operation, the sanitisation section signal will not change colour immediately the sanitisation person presses the **GREEN** release button and the signal will not change to **AMBER** until the train loader initiates this change. This allows safe operation in the sanitisation section and total control of train movement through the station by the train loader.

7. The **AMBER** push buttons in the loading section sets the amber signal to **AMBER** from **RED** but does not change the station release signal to **GREEN**.
8. Option 3 sets both the station release signal **GREEN** and the sanitisation section signal to **AMBER** simultaneously, by use of the **GREEN** push buttons located in the loading area of the station.
9. The buttons can be pressed sequentially if required, because a change in train progression through the station is required, with no detriment to the automatic system operation which will reset as soon as a train passes over the reset to **RED** signal sensors.

Note: - Signal system sensors can be of varying types: -

A. Optical infrared beam, mode of operation reflection off carriages initiates circuit switching. At present there is only one type of optical sensor in use.

B. Inductive triggered by magnetic material passing over the sensors. Several types of inductive sensors are in use, but all operate in a similar manner.