S STOCK DOOR OPERATION
By Trevor Wright

Following on from the notes in the September 2014 issue of *Underground News* regarding passenger door operation over the years, the following may be of interest regarding S Stock.

S Stock train doors have three selectable modes of operation, 'Operator', 'Passenger' and 'Both'. All trains are equipped for all modes and the actual mode is selected by the Train Operator via the Train Control Monitoring System (TCMS – a touch screen computer) in the leading driving cab.

In 'Operator' mode, when the driver has stopped the train correctly at a platform, an indication is received that the train is correctly berthed and the train reads the platform details and door opening pattern from a RFID (Radio Frequency Identity) Tag which hangs under the platform edge. The number of such tags varies depending upon the scope, at a specific location, for there to be more leeway in the train stopping position. Minimum is 3 tags and up to 6 may be found. When the Train Operator pushes the two door open buttons on the correct side, the door opening pattern for that station and platform is triggered by the TCMS and the relevant doors open. At shorter stations this may cut out either 1, 2 or 3 doors at the front or rear or a combination thereof. For example, at Paddington inner rail, the front two doors and rear two doors are cut out. Announcements about doors which will not open are made automatically before arrival at the stations concerned and a red 'X' and "door not in use" sign illuminates above the door.

In 'Passenger' mode, when the Train Operator has the correct platform position stopping indications and operates the cab door open buttons, the doors simply release – the passenger push buttons illuminate and these buttons must be operated by the passengers to cause any door set to open.

In 'Both' mode the train reads a trackside beacon which will be programmed to tell the train whether to open all the doors (that should be opened for that specific platform) or to release the doors for passenger push button operation. The beacons will be programmed for the specific station and may give differing commands for different times of day or days of the week.

At present, the normal mode of operation is that the Train Operator opens all doors and trains default to 'operator' mode. At present all beacons will trigger all trains to open doors at all times if 'Both' mode is selected. 'Passenger' mode is available but is not in routine use. However, it is known some drivers have selected this from time to time anyway. The trains also have the software to trigger the door operation upon stopping at the correct stopping mark without any release from the Train Operator, but this is locked out and there is no agreement for its use. A change to the door operation instructions towards increased use of passenger open is awaited for the future, possibly when the D Stock has been withdrawn.

Auto Close: If the Train operator has not triggered the door close operation, at about 30 seconds most of the open doors will automatically close and the interior and exterior passenger door open push buttons become active and can be used to reopen the doors. They will close again after about 30 seconds if the driver has not yet operated the door close function from the cab. The exception are the two door sets marked with the blue wheelchair symbols in the MS (Motor Shoegear) cars that are intended for use by mobility impaired passengers (and match up with level access platform humps at some stations). These doors will trigger an auto close at around 45 seconds. However, these doors are fitted with infra-red sensors that detect if the door way is in use at the point it intends to auto close – if the beam is broken the auto close function will be inhibited until the beam is unbroken and the doorway will then auto close. Operation of the cab door close button will override the broken beam and close all doors. The Train Operator can inhibit the auto close function if appropriate at a specific station. Doors are fitted with an obstacle detection system in which an obstructed door will slightly reopen up to 3 times to permit a trapped object to be removed. After this the door will stop at the obstruction until it is removed or there is intervention from the Train Operator. Unlike previous rolling stock there is no 'push back' facility on the doors, whereby a passenger can push the door open slightly. Doorways are also equipped with a sensitive edge function which can detect a dragging force on the door. This will apply an emergency train brake to reduce any risk of a passenger being dragged along a platform by something thin, such as a strap, trapped in a doorway.

On trains where the driver has not stopped within the correct stopping berth, the Train Operator may, after following set protocols, open the doors on either (1) all but the first car, or (2) all but the first and last cars. This would also facilitate door release in emergency circumstances.

S Stock trains do not have 'porter' buttons, but to facilitate detrainment (closing the doors of the train one car at a time) the Train Operator can change the operation of the passenger door open buttons to porter buttons by using the TCMS computer in the cab.

All doors can be opened individually by staff members from inside the train and one door set per car can be opened by staff members from outside the train.

The functionality of the S Stock doors is way beyond the era of slam doors or the flirtations with use of 'passenger open' in the past.