Train Describers, Remote Control Systems and Level Crossings

Railway Signalling Seminars

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Overview

• Train Describers.

• Remote Control Systems.

• Level Crossings.
Train Describers

(ID’s for trains)
Train Location

• Occupied track circuits highlighted red on VDU.

• But no information on which train is where.

• Job of the train describer is to keep track of this information.
Train Describers

• Keeps track of trains entering/stepping through/leaving a section of railway.

• Must receive and send signals to surrounding train describers.

• Early Transmission for incoming trains allows routes to be set.
Example VDU Display
Calculations

• Initial train positions entered via operators control unit.

• Interlocking provides position information for steeping through.

• Stepping through for routes provided from scheme plan via “Stepping” tables.
Remote Control Systems

(For changing the tv channels on carriages with tv’s)
Expensive business

**Problem:** Physical distance between signalling centre and interlocking introduces cost (many cables over long distance).

**Solution:** Remote control systems (1950’s) – Allow multiple signals along a single pair of cables.
Time Division Multiplex System

Multiple signals sent along same cable at synchronised time intervals.

Note: No need to be fail-safe as interlocking is still around!
Frequency Division Multiplex System

Transmitter/receiver pair for certain frequencies. Non overlapping frequencies can be sent in parallel.
Level Crossings

(The comeback for the pelican.)
Super/Sub Types and Disjoint Top Sorts

Level crossings come in all shapes and sizes thanks to:

– Location
– Usage
– Speed
– Electrification
The Gates Example

- Gates controlled by railway staff.
- Signal only clears for train when gate closed.
The Barrier Example

- Electronic barriers (usually) controlled remotely.
- Signal for traffic and pedestrians.
Wig-Wag Signals

- Amber before barriers begin to lower.

- Flashing red when lowering and lowered.
The Automatic Half Barrier

- Same sequence as barrier, but automatically initiated when trains pass “Strike-in” point.
- Notice barrier only covers half of the road.
Automatic Open Crossings

- NO barriers – only traffic lights.
- Local operation through plunger.
- Additional signals for trains indicate problem.
Summary

• TrainDescribers – implementation details of identifiers.

• Remote Control Systems – time/freq multiplexing.

• Level Crossings – Infinitely many examples....

Next: Nga – Automatic Train Control.