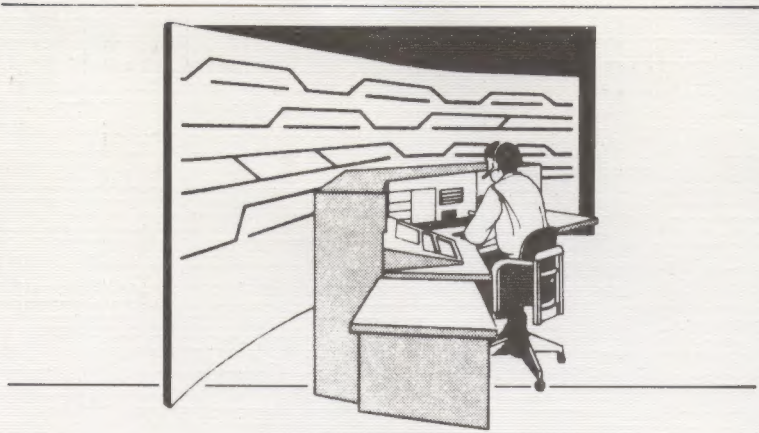


TRAIN DISPATCHER





INTRODUCTION

TO TRAIN

DISPATCHER

GAME

Train Dispatcher is a computer game that simulates control of railroad operations over a 150 mile territory. The player, or "Dispatcher", during his eight-hour shift in the Centralized Traffic Control Office maneuvers up to 12 trains across the territory and into yards at each end. By positioning switches and clearing signals ahead, each train is routed and moved over the territory.

The dispatcher uses a number of color displays to plan routes and monitor the progress of trains enroute. The game ends when all trains have been yarded or the dispatcher's shift ends. Actual playing time will vary between 15 and 30 minutes, depending on skill level played.

RAILROAD DISPATCHING FROM A CTC OFFICE AND THE

TRAIN DISPATCHER GAME

HOW TO PLAY

In an eight-hour shift, you are to move up to 12 trains through the territory into yards at each end. Your objective is to get as many trains as possible over the territory and yarded during your shift.

Trains moving from left to right enter the territory at zone "A" and are yarded after leaving zone "T". Trains moving from right to left enter the territory at zone "T" and are yarded after leaving zone "A". Trains are routed by positioning switches and clearing signals ahead of each train as it emerges from the yard and moves over the territory. On all track displays, the red lines indicate a train's location.

As a dispatcher you do not move trains (that's the engineer's job). You clear signals in front of the train which tells the engineer to move his train. Signals are like traffic lights, a clear on green signal tells the engineer to proceed past it. The train will travel at low speed (25 mph) with one signal cleared ahead. It will travel at high speed (50 mph) with more than one signal cleared ahead.

Progress and performance are continuously monitored. Your performance rating, which is displayed on the bottom of the screen, is based on the total miles traveled by your trains divided by the current elapsed shift time.

The game will end when you have yarded all of your trains or the elapsed shift time clock displayed on the bottom of your screen reaches 8 hours (08:00:00). The level of play determines how

fast the clock runs. End of game scoring includes points for average train speed, miles crossed, and trains yarded. Bonus points are awarded if all trains are yarded before the end of your shift.

The action in this game is trying to keep track sections cleared in front of each train and setting switches to keep the trains moving.

Safety procedures are designed into the system to prevent "accidents." The system will not execute commands deemed to be "unsafe." For example, you cannot clear a signal into a track section that is occupied by a train or already cleared for a train running in the opposite direction. The system will not accept a command to throw a switch that has a cleared route or signal over it--the signal must be cancelled, and then the switch thrown.

If you are the more adventurous type, you can use the template and the FUNCTION AND CONTROL TABLE located on the color instruction sheet to figure out how TRAIN DISPATCHER works.

For the more methodical minded, we have included more detailed step-by-step instructions, complete with examples, to help you get started. Also see Appendix A which contains the mileage table for the territory, and Appendix B which shows the differences between the five playing levels.

DISPLAYS

The primary display is the OVERVIEW (Figure 1).

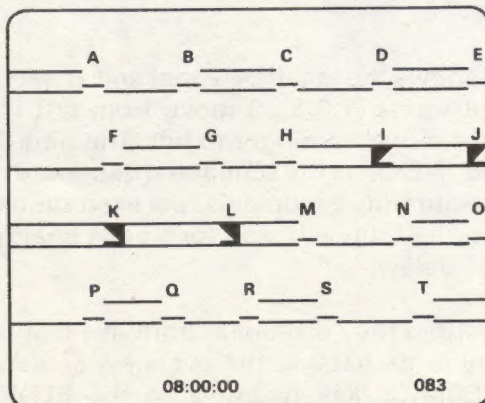


Figure 1. OVERVIEW

To return to the overview screen from any other screen, press the OVERVIEW key.

OVERVIEW shows the location of trains in the territory, switch positions, zones cleared and block permits in effect. The two running displays at the bottom show elapsed shift time and current train speed summary (RATING).

The performance rating is the total miles travelled by all trains divided by the current elapsed shift time. If you have 12 trains to be yarded, this rating must reach 190 somewhere during the game in order for you to get all trains yarded by the end of the shift.

Now press the TRAIN SHEET key. This brings up the TRAIN SHEET display.

| TRAIN SHEETS | | | | |
|--------------|-------|-------|-------|-----|
| TID | NEXT | CREW | ZONE | SPD |
| 1 | 00:00 | 01:00 | P - Q | 0 |
| 2 | 00:00 | 02:15 | E - D | 0 |
| 3 | 01:23 | 03:45 | I - J | 0 |
| 4 | 00:00 | 04:00 | I - H | 0 |
| 5 | 00:00 | 05:00 | Y - A | 25 |
| 6 | 00:00 | 06:30 | Y - T | 0 |
| 7 | 01:30 | 07:30 | > - Y | 0 |
| 8 | 02:00 | 08:30 | < - Y | 0 |
| 9 | 02:30 | 09:00 | > - Y | 0 |
| 10 | 03:00 | 10:00 | < - Y | 0 |
| 11 | 03:30 | 10:00 | > - Y | 0 |
| 12 | | | | |

Figure 2. TRAIN SHEET

TRAIN SHEET shows the location (zone) and speed of each train. Odd numbered trains (1,3,5,...) move from left to right. Even numbered trains move from right to left. The time shown in the column labeled "NEXT" is the scheduled departure time from the track section it currently occupies. Crew expiration time (CREW) indicates when the train will stop for a crew change (causing a "thirty minute" delay).

As trains are yarded they disappear from this display. Press the OVERVIEW key to go back to the overview screen. Now press the BLOCK PERMITS key to bring up the BLOCK PERMITS screen.

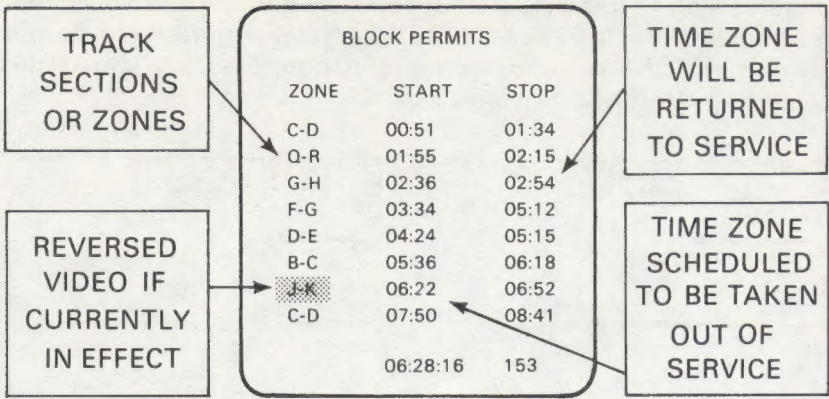


Figure 3. BLOCK PERMITS

This display shows all block permits scheduled during the shift. Included are the affected track sections (zones), scheduled start times and stop times for each block.

Track and right-of-way maintenance are perpetual problems for railroads. Track sections must be closed down periodically to permit work crews to work safely. Block permits are issued for short periods during which the track is not available to the dispatcher.

Note that operational policy prohibits a block permit from going into effect if that track section is currently occupied by a train or is cleared for an approaching train.

Also, any block permit in effect when you call up this screen will be shown in reverse video. On the overview screen a track section is shown in dark blue when a block permit is in effect.

Press the OVERVIEW key to go back to the overview screen.

TRAIN CONTROL

Switch Positions

Press the OVERVIEW key to show the overview screen. Most switches are in the NORMAL position.

Figures 4 and 5 show how switches appear on both the overview screen and the "zoomed-in" ZONE screen. Figure 4 shows the switch at ZONE A in the normal position. Figure 5 shows the switch in REVERSE position.

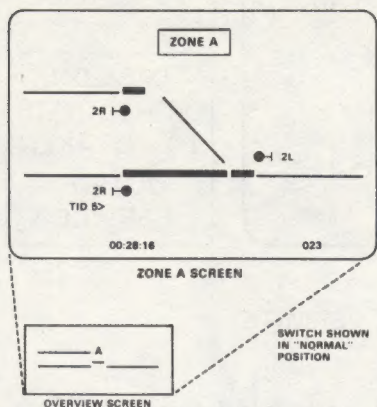


Figure 4. SWITCH NORMAL

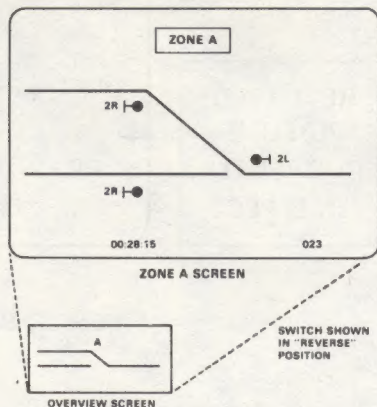


Figure 5. SWITCH REVERSE

A switch in the normal position allows a train to move through the zone on the mainline track. Setting a switch to reverse routes the train between the mainline and a siding.

ZONE SELECTION

Check, on the overview, how the switch at ZONE A is positioned (normal or reverse).

Now, press the alpha key A. This brings up the close-up view of the switch at ZONE A (zone A is printed near the top of the screen).

Press the OVERVIEW key and you go back to the overview. Now, press any of the alpha keys between A and T. Each key will bring up a different close-up screen of the zone corresponding to the key pressed.

Now, press the alpha key A again. Look at the screen--Zone A will be up.

Now press the NEXT ZONE-RIGHT key, Zone B appears. Press the NEXT ZONE-RIGHT key again, Zone C appears. Each press of



TRAIN DISPATCHER

**For the ATARI 400/800
Disk and Tape Versions**

EQUIPMENT: To Play Train Dispatcher you need:

- ATARI 400 or ATARI 800 Computer
- ATARI 410 Program Recorder or ATARI 1050 Disk Drive
- Television Set or Monitor (Color Preferred)
- Dispatcher Tape Cassette or Floppy Disk

Getting Started for Tape Cassette Version

1. Disconnect your ATARI Disk Drive Unit if you have one.
2. Connect your ATARI 410 Program Recorder.
3. Place the **KEYBOARD TEMPLATE** over the function keys on the right hand side of the keyboard.
4. Turn on your ATARI computer.

5. Insert Train Dispatcher Tape cassette in the Program Recorder. Make sure cassette is fully rewound (tape on left reel, leader on right).
6. Type "CLOAD" depress RETURN. When the ATARI beeps, depress PLAY on the Program Recorder, then depress RETURN on the ATARI keyboard. The tape will start to load for approximately 2 minutes.
7. When READY is displayed on the screen, type RUN depress RETURN, when the ATARI beeps depress the RETURN key. The tape will continue to load for approximately 6 minutes.
8. Once the tape has fully loaded, the Title Screen will be displayed then the Level selection screen will appear. Enter the level of play desired (1 to 5). The Track Overview screen will appear. You are now ready to play TRAIN DISPATCHER!

Getting Started for Disk Version

1. Make sure the Disk Drive is installed, connected, and Powered up.
2. Place the KEYBOARD TEMPLATE over the function keys on the right hand side of the keyboard.
3. Turn on your ATARI computer.
4. Insert Train Dispatcher Disk in the 1050 Disk unit label side up.
5. When READY is displayed on the screen, type RUN "D1: DISPATCHER" and depress the RETURN key.
6. Once the program has fully loaded the Title Screen will be displayed then the Level selection screen will appear. Enter the level of Play desired (1 to 5). The Track Overview screen will appear. You are now ready to play TRAIN DISPATCHER!

FUNCTION AND CONTROL TABLE

| FUNCTION | DESCRIPTION | KEYS |
|---------------------|---|-------------------------------|
| CLEAR 2 LEFT | Sets signal 2L to green Sets signal 2L to red | 1 then SELECT 1 then START |
| CLEAR 2 RIGHT | Sets signal 2R to green Sets signal 2R to red | 2 then SELECT 2 then START |
| CLEAR 4 LEFT | Sets signal 4L to green Sets signal 4L to red | 3 then SELECT 3 then START |
| CLEAR 4 RIGHT | Sets signal 4R to green Sets signal 4R to red | 4 then SELECT 4 then START |
| SWITCH NORMAL | Changes switch position from reverse to normal Position. | 5 then SELECT |
| SWITCH REVERSE | Changes switch position from normal to reverse Position. | 6 then SELECT |
| PAUSE | Stops the clock and puts the game on hold. Depressing any other key will restart the game. | 8 |
| TRAIN SHEETS | Displays Train Sheet information. | 9 |
| BLOCK PERMITS | Displays Block Permit information. | 0 |
| NEXT ZONE (LEFT) | When a specific zone is displayed (A-T), depressing this key will display the previous zone. (B to A) | < |

(Continued)

| FUNCTION | DESCRIPTION | KEYS |
|----------------------|---|--------|
| NEXT ZONE (RIGHT) | When a specific zone is displayed (A-T), depressing this key will display the next zone (A to B). | > |
| OVERVIEW | Displays the territory overview. | RETURN |
| TRANSMIT | Causes a selected command to be executed. | SELECT |
| CANCEL | Causes a selected command to be executed. | START |

the NEXT ZONE-RIGHT key will move you one zone to the right. Similarly, each press of the NEXT ZONE-LEFT key will move you one zone to the left. You will be using these controls a lot. Just remember that these work only in "close-up" mode. Nothing happens if you press a NEXT ZONE key when the OVERVIEW screen is displayed.

GAME CONTROLS

To move trains, you issue and transmit two types of commands:

1. Position switch to NORMAL or REVERSE
2. Set signal to "CLEAR"

Keys on your computer keyboard are used to issue and transmit these commands. A summary of the use of these keys is shown on the Function and Control Table on the color instruction sheet of this manual. The best way to learn is by doing. So we give you several step-by-step examples.

SWITCH REVERSE: Example 1

- Step 1. Press A to get Zone A on the screen.
- Step 2. (Switch in normal position) press the switch REVERSE key. The Message "SWITCH REVERSE" appears near the top of the screen.
- Step 3. Press the TRANSMIT key. This transmits the order. Notice that only now did the switch "throw" from NORMAL position to REVERSE position.
- Step 4. Press the OVERVIEW key to go back to the OVERVIEW screen. Check the position of the switch at A. The main-line track is routed to the siding.

RECAP: Three important rules:

1. You can only issue the transmit commands to throw switches when you have a specific zone or station display on the screen (In step 1 you pressed A to get the zone A screen).
2. Before transmitting a command you must first set it up. In step 2 you set up the reverse switch command by pressing the SWITCH REVERSE key. This set up the command in the dispatcher's computer but did not send it out over the territory to the switch at Zone A.
3. To execute a command it must be transmitted to the zone. In step 3 you pressed the transmit key. This

sent the command to the field, causing the switch to throw. Only after the switch threw to REVERSE did the switch position change on the Zone A screen and on the OVERVIEW screen.

SWITCH NORMAL: Example 2

Once a switch has been set to REVERSE, it will stay in that position until you change it by issuing and transmitting a switch NORMAL command.

To return the switch at ZONE A to the NORMAL position:

- Step 1. Press A to get ZONE A displayed.
- Step 2. Press the switch NORMAL key. The message "SWITCH NORMAL" will appear at the top of the screen.
- Step 3. Press the TRANSMIT key. This transmits the switch command to Zone A and causes the switch to throw back to the NORMAL position.

Select several other zones and practice setting switches to normal and reverse positions. Remember, however, that because there are safety interlocks built into the system you will not be able to change a switch if a train is over it, or if signals are cleared over the switch.

CLEAR TRACK SIGNALS

An engineer may move his train into a track section only under a green light. On the Zone and OVERVIEW screens track signals are shown in the following color codes:

| | |
|------------------|---|
| WHITE | TRACK NOT CLEARED |
| GREEN | TRACK CLEARED |
| RED | TRAIN PRESENT |
| DARK BLUE | BLOCK PERMIT IN EFFECT |
| BLACK | TRAIN PRESENT AND ITS CREW TIME HAS EXPIRED. |

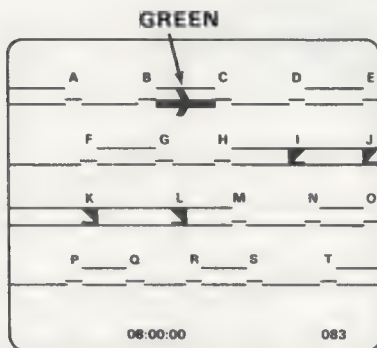
In addition, an arrow appears near the center of a track section to indicate the direction (right to left) cleared, or the direction of train travel.

CLEAR RIGHT: Example 3

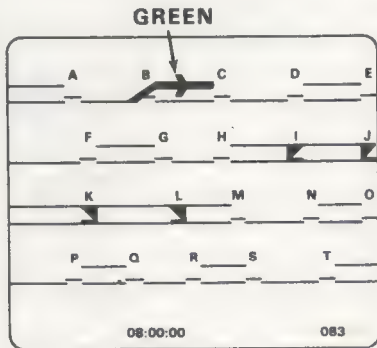
Let's work with track section between stations B and C.

- Step 1. Press the OVERVIEW key and look at the overview. Both the siding (upper section) and mainline track B and C should be white on a color TV or monitor--otherwise light grey.
- Step 2. Press alpha key B to bring up ZONE B. Now we will clear the track for a train to move to the right.
- Step 3. Press the CLEAR 2-RIGHT key. This sets up the "2-RIGHT" track clear signal.
- Step 4. Press the TRANSMIT key to send the clear track signal. Look at the screen. The track section to the right of the switch should be green.
- Step 5. For a clearer view press the OVERVIEW key to get back to the OVERVIEW. The mainline track between B and C should be green, with an arrowhead in the center pointing to the right as shown in Figure 6.

IMPORTANT. If the switch at B were thrown to REVERSE, the siding between B and C would be cleared as shown in Figure 7.



SWITCH AT B IN NORMAL POSITION
 TRACK CLEARED FROM B TO C FOR TRAIN TRAVELING FROM LEFT TO RIGHT.



SWITCH AT B IN REVERSE POSITION.
 TRACK CLEARED FROM B TO C FOR TRAIN TRAVELING FROM LEFT TO RIGHT

Figure 6. CLEARED RIGHT MAINLINE

Figure 7. CLEARED RIGHT SIDING

CANCEL RIGHT: Example 4

Suppose you want to move a train from left to right through track section B-C. To do this requires two commands. First, you must CANCEL the existing "CLEAR RIGHT" signal. Then you can issue a new "CLEAR LEFT" command.

Step 1. Press B to get the Zone B screen.

Step 2. Press the CLEAR 2-RIGHT key to set up the "2-RIGHT" signal. This time we are setting it up to be cancelled rather than initiated.

Step 3. Press the CANCEL key. This cancels the signal. The track section between B and C returns to white. (Check this on the overview.)

CLEAR LEFT: Example 5

Now we want to clear the track section between B and C for a train moving from right to left.

Step 1. Press C to get Zone C displayed.

Step 2. Press the CLEAR 2-LEFT key to set up the "2-LEFT" signal.

Step 3. Press the TRANSMIT key to send the CLEAR LEFT command.

Now, the track section between B and C should be green again, but with the arrow in the center pointing to the left as shown in Figure 8 (check the overview).

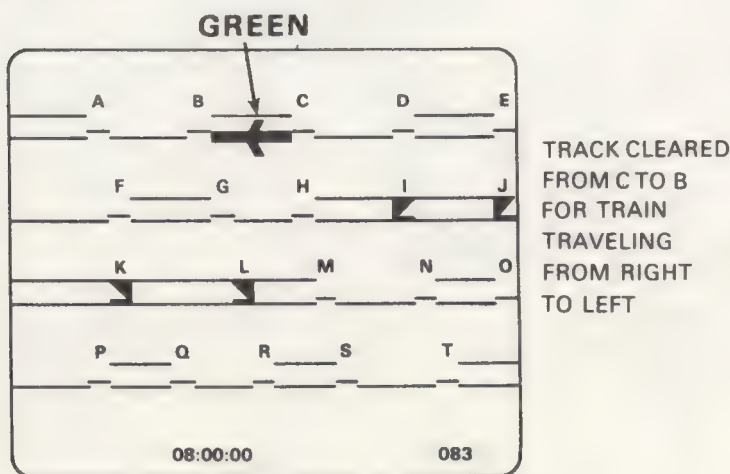


Figure 8. CLEARED LEFT MAINLINE

IMPORTANT. Did you notice that although we cleared the same section of track (B to C), we did it from the other end of the track section? In examples 3 and 4 we worked with Zone B. In example 5 we worked with Zone C.

SCORING

The efficient dispatcher will keep trains moving at maximum speed while in his territory, and will move all trains through the territory and into the yards during his eight hour shift.

Your final performance rating (TOTAL SCORE) will be computed from:

BASE SCORE = (Total mileage/elapsed shift time) X (Level of difficulty) X 20

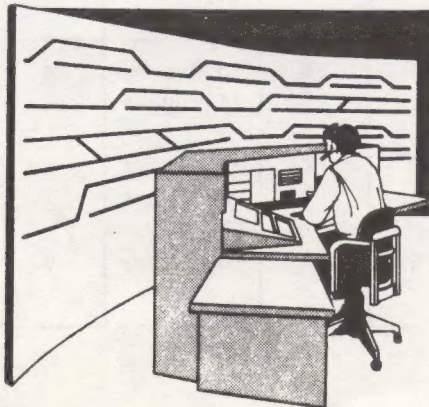
TRAINS YARDED = Number of trains reaching both yards X 1000

MTN. 50MPH = Number of blocks crossed by trains traveling at maximum speed (50 MPH) X (Level of Difficulty) X 10

EARLY FINISH = Shift time remaining (minutes) X (Level of Difficulty) X 200

Level of Difficulty is:

- 1 for Visitor
- 2 for Cub Dispatcher
- 3 for Dispatcher
- 4 for Chief Dispatcher
- 5 for Trainmaster



APPENDIX A
Mileage Table

| ZONE | MILES | ZONE | MILES |
|-----------|-------|-----------|-------|
| Yard to A | 1 | K to L | 3 |
| A to B | 13 | L to M | 3 |
| B to C | 4 | M to N | 15 |
| C to D | 15 | N to O | 3 |
| D to E | 3 | O to P | 12 |
| E to F | 11 | P to Q | 2 |
| F to G | 3 | Q to R | 13 |
| G to H | 23 | R to S | 3 |
| H to I | 3 | S to T | 11 |
| I to J | 4 | T to Yard | 1 |
| J to K | 4 | | |

APPENDIX B
PLAYING LEVEL DIFFERENCES

| LEVEL | LEVEL NO. | NO. OF TRAINS | PLAYING TIME | NO. OF BLOCK PERMITS | NO. OF CREW EXPIRATIONS IN 8 HOURS |
|------------------|-----------|---------------|--------------|----------------------|------------------------------------|
| Visitor | 1 | 8 | 30 Minutes | 4 | 3 |
| Cub Dispatcher | 2 | 10 | 24 Minutes | 5 | 4 |
| Dispatcher | 3 | 12 | 24 Minutes | 6 | 5 |
| Chief Dispatcher | 4 | 12 | 20 Minutes | 7 | 6 |
| Train-master | 5 | 12 | 15 Minutes | 8 | 7 |

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