



DECUS

PROGRAM LIBRARY

DECUS NO.	8-269
TITLE	MORSE CODE TRAINER
AUTHOR	Jack Harvey
COMPANY	National Data Systems, Inc. Montvale, New Jersey
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SOURCE LANGUAGE	PAL III

MORSE CODE TRAINER

DECUS Program Library Write-up

DECUS No. 8-269

GENERAL

The program generates International Morse Code signals as tones in the output to a digital to analog converter. (A DAC is not required. Any flipflop register program loadable from the AC can be used.) It operates in three modes:

1. Generate random five letter groups
2. Send characters typed on keyboard
3. Send random characters and wait for correct response on keyboard.

Speed, character spacing and character set are controlled from the keyboard.

EQUIPMENT

Any 4K PDP-5, 8, 8I, 8L, 8S and 12 with or without extended arithmetic, plus any IOT controlled flipflop.

CORE USEAGE AND EAE OPTION

The Starting Address is 0200.

The version in the DECUS library uses 110-2066 plus 67-104, 6700-7167 for the DEC EAE simulator. Installations having EAE can eliminate the simulator by reassembling with normal EAE symbols.

OPERATION

On starting at 0200, a list of the available commands is printed and the system enters the L mode (see below). The program is controlled by single letters typed on the TTY keyboard. When in a mode to accept characters from the keyboard as text to transmit or store, the ALT MODE key returns the program to command mode.

COMMANDS:

- L: Enter a list of characters to be used by the random group generator. This can be the entire alphabet, etc., or a small set. For example, a student can start with a small group of letters and gradually increase as he learns. Troublesome letters can be put on the list multiple times and therefore will come up more frequently.
- W: Set character speed, words per minute. Enter decimal number, hit return.
- B: Set spacing between characters in bauds. Enter decimal number, hit return.
- S: Send random five letter groups.
- N: Stop echo of code characters on teleprinter.
- P: Resume printing code characters on teleprinter.
- K: Send characters typed on the keyboard.
- C: Copy Morse characters on keyboard. The program sends random groups. After each character, it waits for the character to be struck on the keyboard. If an incorrect character is struck it is not echoed to the printer and the correct character is repeated in Morse.

NOTES:

The program "talks" to the operator in Morse. When it is waiting for operator input, it sends "DAH-DIT-DAH". When it receives a correct command it sends "DIT-DAH-DIT." If incorrect, "DIT-DIT-DAH-DAH-DIT-DIT," of course.

The program checks for a keyboard flag after completion of a Morse character. If the speed is very low, it may be some time before the command letter will be printed and a response made.

Commands such as L, W, B, P and N cause a return to the command mode. The operator must give an S, K or C command to resume sending. An exception to this is the initial start at 200 which leads the operator through L, W, B and then goes into S.

INTERFACE

The program generates a tone by alternately loading a flipflop register with 0000 and 7777. An IOT at 1037 (page 11 of the listing) and at 1043 alternately sets and clears a register, producing a square wave. A study of the TONE and PITCH subroutines on pages 11 and 12 should reveal how to alter the program to fit available hardware. The state of the link on entry of TONE determines, at 1042, if a sound or a space will be generated. As originally programmed, the IOT at 1037 and 1043 jam transferred the AC contents (0000 at 1037 and 7777 at 1043) into a digital to analog converter. The IOT's could as easily be set and clear commands to a flipflop.

In debugging the interface, the Morse can be monitored by watching the link, which will be sending Morse in blinker if the program is sending correctly. A portable radio near the console can sometimes hear the code, or a back wave. (Ask an OT if you don't know what a back wave is.)

As delivered, the program should run at correct speed on a 1.5 u second machine. Page 1 of the listing gives constants for other machines. Primarily, change location 0111 to 7762 for the 8S and 7426 for the 8L.

