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402 648



TM(L)-715/044/00

Utility Program Descriptions

Milestone 11

Write Change Tape (SWRTOUT)

12 March 1963

TECHNICAL MEMORANDUM

(TM Series)

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Utility Program Descriptions

SYSTEM

Milestone 11

DEVELOPMENT

Write Change Tape (SWRTOUT)

CORPORATION

by

R. C. Wise

2500 COLORADO AVE.

12 March 1963

SANTA MONICA

Approved

CALIFORNIA

J. B. Munson

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IDENTIFICATION

- A. Title: Write Change Tape (SWRTOUT), Ident K35 Mod AE
- B. Programmed: R. C. Wise, System Development Corporation
1 February 1963
- C. Documented: R. C. Wise, System Development Corporation
15 February 1963

PURPOSE

SWRTOUT produces a tape for later use by the program SMERGE. The tape contains messages input to SWRTOUT and operated upon by SWRTOUT. SWRTOUT accepts individual or grouped messages from a user program and collects like messages until a block of these messages is built. It then adds a checksum and writes the messages on a magnetic tape.

USAGE

A. Calling Sequence

```
      L   RTJ   SWRTOUT
           N     B
L+1  ERROR RETURN
L+2  NORMAL RETURN
```

Where: "N" is the number of words in buffer starting at location "B".

B. Parameters

"N" is the number of words to be accepted by SWRTOUT. "N" occupies bits 15 to 23 of location L. If "N" is zero, SWRTOUT will terminate operation by calling SMERGE.

"B" is the starting location of the first message SWRTOUT is to accept. "B" occupies bits 0 to 14 of location L.

C. On-line Messages

SWRTOUT has two messages, both are printed on the on-line 1612.

1. PLEASE MOUNT WRITE TAPE FOR SWRTOUT ON TAPE 18, AND HIT START.
2. UNRECOVERABLE ERROR IN SWRTOUT - MOUNT NEW TAPE 18 AND REINITIATE PREVIOUS FUNCTION . . .

Message 1 occurs the first time SWRTOUT is entered.

Message 2 occurs if there is persistent write parity or write length error, the change tape is too short, or a commanding message cannot be verified.

D. Tape Assignments

SWRTOUT uses tape 18 - unit 1, cabinet 2, channel 5/6 for the change tape.

E. Input Formats

The individual messages are described in Reference A.

Grouped messages must have each individual message begin left justified in the 1604 word. Only like messages (i.e., same message code) may be grouped.

F. Output

The Change Tape

The Change tape is an intermediate tape produced by SWRTOUT for the use of SMERGE.

It is a single file tape, each record is a message block. Message blocks concerning a given Vehicle, Station, Revolution are separated by a header record specifying the Vehicle, Station and Revolution. Maximum record size is 512 words.

CHANGE TAPE FORMAT

```

Header  V1 Rj Sk
BLOCK   A (V1 Rj Sk)
BLOCK   B ( "      )
BLOCK   C ( "      )

Header  V1 Rm Sn
BLOCK   B (V1 Rm Sn)

Header  Vo Rp Sq
BLOCK   A (Vo Rp Sq)
BLOCK   B ( "      )
BLOCK   A ( "      )

EOF

```

G. Error Return

The error return in the SWRTOUT calling sequence is not presently used, but must be present as SWRTOUT returns to L+2 for a normal return.

When an unrecoverable error occurs, SWRTOUT informs the operator of the error and halts. No restart is possible - the previous function must be reinitiated.

OPERATING DESCRIPTION

SWRTOUT is entered by the user program with an RTJ instruction followed by two parameters; the "B" parameter specifying the location of the input message block and the "N" parameter specifying the number of words in the message block ($1 \leq N \leq 511$).

SWRTOUT will make the following checks.

1. If buffer is empty, transfer input to buffer.
2. If buffer is not empty
 - a. If message type input is same as buffer type
 - 1) If the number of words input plus the number of words in buffer is greater than 511 words, write the buffer and transfer the input to the buffer.
 - 2) Transfer the input to buffer
 - b. Write the buffer and transfer the input to the buffer.

If SWRTOUT writes the buffer on the Change Tape, a complement checksum of the buffer will be added to the record written. If a block consists of commanding messages, SWRTOUT will reread the record and verify the block, using a word-by-word comparison of a one word input buffer and the original message.

If the conditions for writing the output buffer are not met, SWRTOUT will immediately return to the user program after transferring the message block to its own output buffer.

Upon receipt of the "end of input" flag, SWRTOUT will empty its buffer, write an end of file, and transfer to SMERGE via the COPII successor call. The Change Tape will be rewound.

All error recoveries will be attempted four times before an error message is given.

RESTRICTIONS

- A. SWRTOUT uses tape 18, unit 3, cabinet 2, channel 5/6
- B. Interrupt is locked out by SWRTOUT.

- C. Only one type of message may be in a message block.
- D. Messages must start left justified in a 1604 word and must be an integral number of 1604 words.
- E. An index register cannot be used in specifying the starting location of a message block.
- F. Header messages must precede sets of message blocks.
- G. SWRTOUT has a time dependent processing loop and should not be stopped.
- H. SWRTOUT uses TAPE, PRINT1612, CALL.

TIMING

The timing of SWRTOUT is dependent upon the volume of data to be written on the change tape.

STORAGE

Program	146 ₈
Buffer	1001 ₈
Total	1147 ₈

TRANSFER FUNCTION

<u>Area</u>	<u>Operation</u>
SWRTOUT	Disable interrupt. Set up exit. If this is initial entry, go to REW.
SWR1	Get input parameters. If "N" parameter is zero, go to FINIS.
SWR2	Set up index for transfer of data. If buffer is empty, go to INBUF.
CHKIN	If input message type differs from buffer go to OUTPUT (a SBR). If number of words to be input plus number

<u>Area</u>	<u>Operation</u>
	of words in buffer is greater than buffer length (511), go to OUTPUT.
INBUF	Transfer input to buffer. Clear buffer, empty flag. Go to EXIT.
REW	Request a write tape on unit 18, rewind the tape. Go to SWR3.
SWR3	Clear initial flag, go to SWR1.
FINIS	If buffer is empty, go to WEF. Go to OUTPUT
WEF	Write an End-of-file on Tape 18. Rewind tape 18. Transfer control to SMERGE via MTCII's CALL.
OUTPUT (A SBR)	Compute complement checksum for buffer and store as last word of buffer. Write buffer on tape. If any error after four tries, go to TER. Was last record commanding? No - go to INIT. Yes- go to VERIF
VERIF	Backspace 1 record, Read record into 1 word buffer. Compare against record written. If cannot compare with four

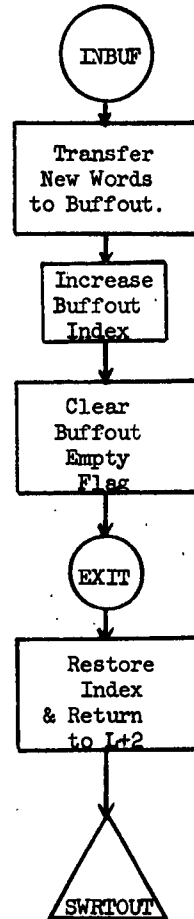
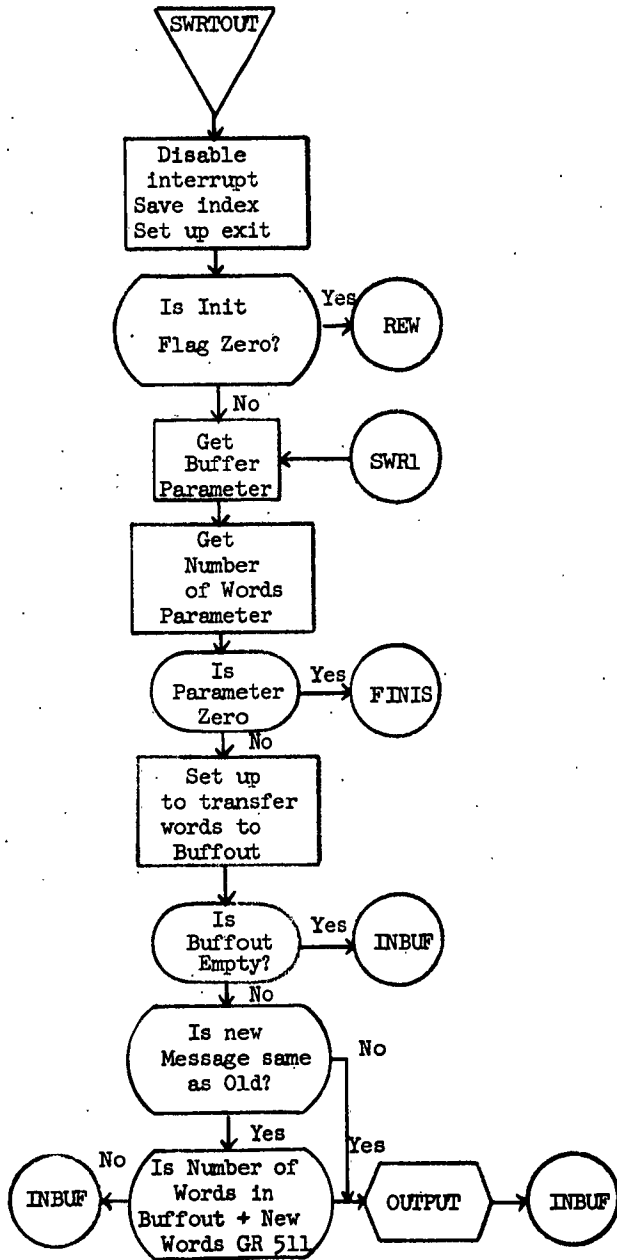
<u>Area</u>	<u>Operation</u>
	tries, go to ERR.
INIT	Initialize buffer flags and indices. Return
TER	Print message to operator and Stop.
ERR	Same as TER
EXIT	Return to user.

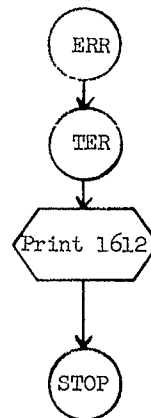
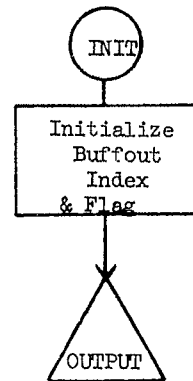
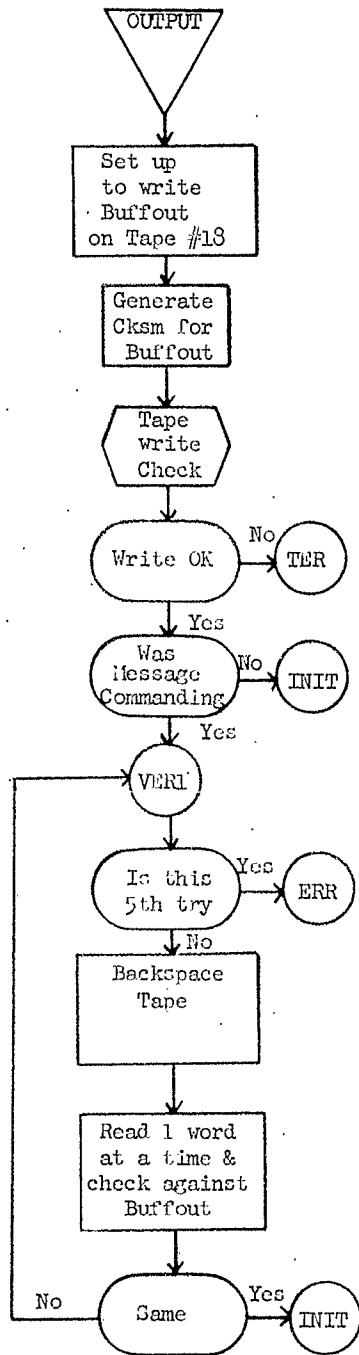
VALIDATION TESTS

SWRTOUT was validated by using a driver (Reference C) to input messages of varying types and lengths. These messages were written on the Change tape and the Change tape was sorted by SMERGE and a new Transfer tape was produced. The Transfer tape was dumped and the dump checked for the desired result.

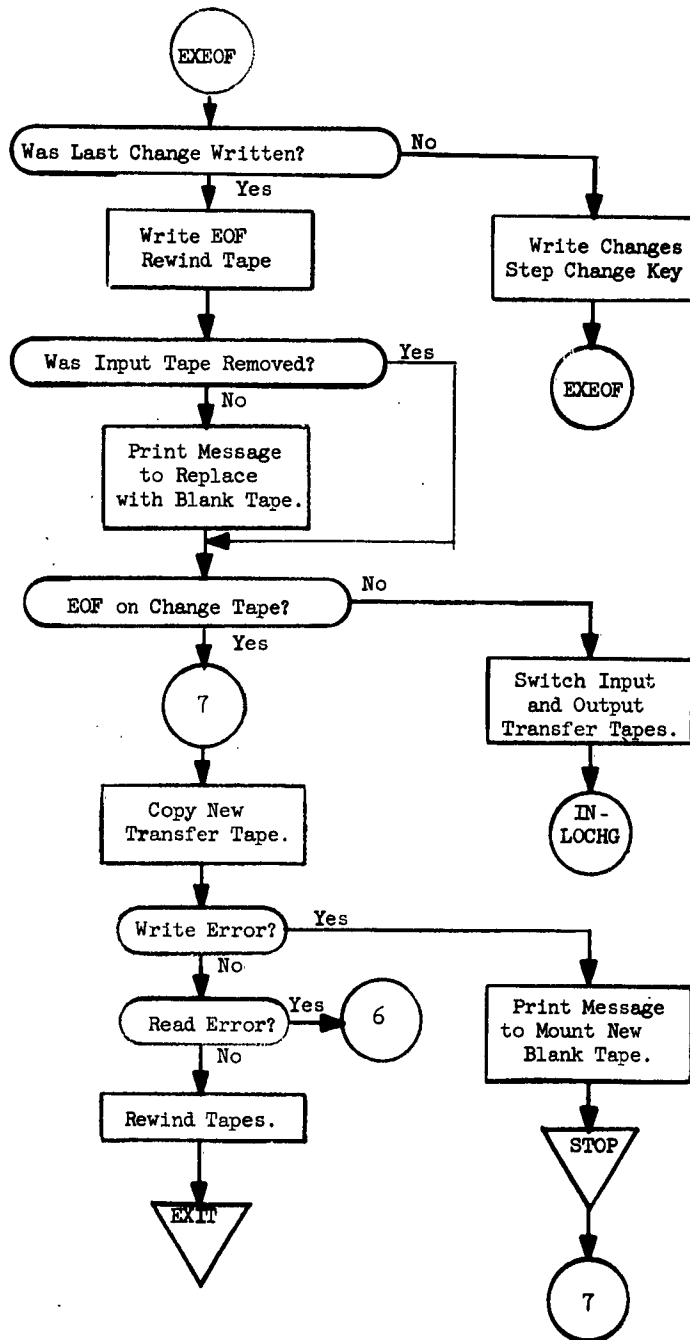
REFERENCES

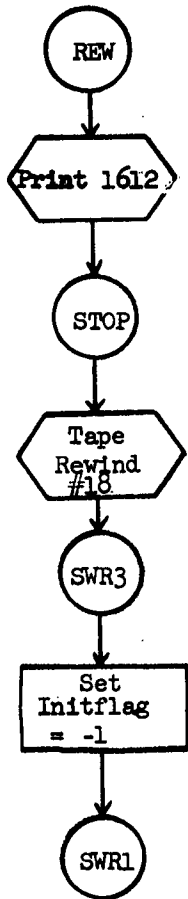
- A. TM-891/001/00, 1604 Augmentation Communication Programs, Milestone 3/4, 22 December 1962.
- B. The AFCPL number for SWRTOUT is 79935.
- C. The AFCPL number for the SWRTOUT driver (SAUGY) is 810
- D. TM-(L)-715/043/00, Utility Program Descriptions, Milestone 11, Merge Change and Transfer Tapes (SMERGE).



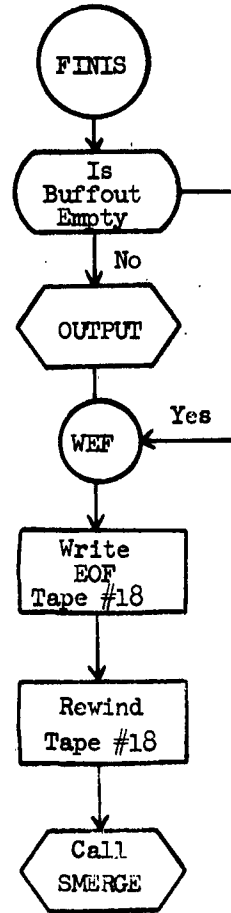


Print: Unrecoverable error in SWRTOUT. Mount new tape & reinitiate previous function.





Print: Please mount a write tape for SWRTOUT on Tape 18, and hit start.



12 March 1963

TM-(L)-715/044/00

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System Development Corporation,
Santa Monica, California
UTILITY PROGRAM DESCRIPTIONS, MILESTONE 11,
WRITE CHANGE TAPE (SWRTOUT)
Scientific rept., TM(L)-715/044/00, by
R. C. Wise, 12 March 1963, 11p.
(Contract AF 19(628)-1648, Space Systems
Division Program, for Space Systems
Division, AFSC)

Unclassified report

DESCRIPTORS: Programming (Computers).
Satellite Networks.

Reports that SWRTOUT (Write Change Tape)
produces a tape for later use by the

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program SMERGE. The tape contains
messages input to SWRTOUT and
operated upon by SWRTOUT. Also
reports that SWRTOUT accepts individual
or grouped messages from a user program
and collects like messages until a block
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