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TECHNICAL MEMORANDUM
(TM Series)

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1604 Simulation Program Descriptions
Milestone II

Data Reduction and Output Processing System Control Program for Augmentation (DROPSA)

by

J. G. Hillhouse
15 March 1963

Approved
J. B. Munson

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1.0 SUBROUTINE IDENTIFICATION

1.1 Title

Data Reduction and Output Processing System Control Program for Augmentation (DROPSA)

Ident: K19, Mod. 04

1.2 Programmed

11 January 1963, J. G. Hillhouse, System Development Corporation

1.3 Documented

15 February 1963, J. G. Hillhouse, System Development Corporation

2.0 PURPOSE

DROPSA is used to reduce data on the two simulated data input tapes written by the SIPSA system and the recording tape produced by SIMSTN. All message types, listed in TM-(L)-834/000/01 and 01A, Bird Buffer Combined Milestone 3 and 4 (see Section 9.3), are recognized and listed in a specified format with added identifying information.

3.0 USAGE

3.1 Calling Sequence

```
L    NOP
  SLJ  4    DROPSA
L+1  SLJ  0    ALPHA
      ZR\phi   MN
L+2  ZR\phi  0
      ZR\phi   P1
L+3  ZR\phi  0
      ZR\phi   P2
```
where:

\[ \text{ALPHA} = \text{Return address when DROPSA is completed.} \]
\[ \text{NN} = \text{Number of parameters.} \]
\[ P_1 = \text{Designation of unit to be used to read input processing requests: 0 for reader, 2-12 for tape.} \]
\[ P_2 = \text{Designation of unit for tape to be processed: 2-12.} \]
\[ P_3 = \text{Type of tape being processed:} \]
\[ \text{FS} = 1604 \text{ Transfer Tape} \]
\[ \text{BB} = 160-A \text{ Simulation Tape} \]
\[ R = \text{Recording Tape.} \]
\[ P_4 = \text{Designation of unit to be used to record the listable reduced data output: 2-12. If printer (13) is chosen, data will also be listed on Tape Unit 3.} \]

3.2 On-Line Messages

3.2.1 Each of the request cards is listed after it is read.

3.2.2 A card contains an illegal request code, i.e., the octal number representing message type to be processed.

**ILLEGAL REQUEST CODE**

*(Card in Error)*

SET JUMP KEY 2 TO IGNORE THIS CARD AND CONTINUE PROCESSING WITH NEXT CARD.
IF INPUT IS FROM READER, CORRECT AND RELOAD ERROR CARD, START.

If tape is being used as input, it is suggested that Key 2 be set to process the next card image on the tape. If Key 2 is not set, the tape will be backspaced one record and then re-read.

3.2.3 Columns 1-4 on card do not contain LIST or HALT.

INCORRECT FORMAT
(Card in Error)

SET JUMP KEY 2 TO IGNORE THIS CARD AND CONTINUE PROCESSING WITH NEXT CARD.

IF INPUT IS FROM READER, CORRECT AND RELOAD ERROR CARD, START.

The tape input comments for 3.2.2 apply to this error.

3.2.4 Select Error

CHECK P1 ON FUNCTION CARD FOR PROPER INPUT DEVICE INDICATOR. IF CORRECT, DEPRESS START AND TRY AGAIN.

An error was incurred by the INPUT program in trying to select the request cards' input source. Check the first parameter on the DROPSA function card for correct value: 0 for reader, 2-12 for tape.

3.2.5 Parity or Buffer Length Error

READ ERROR

IF YOU WISH TO TRY AGAIN FOR INPUT DEVICE = 1) READER--RELOAD ERROR CARD AND DEPRESS START, 2) TAPE--DEPRESS START.
Error occurred while trying to read the request cards. If input is from tape and the start key is depressed, the tape will be backspaced one record and re-read.

3.2.6 Incorrect Request Card Format

One of the following messages will be printed:

a. TOO MANY OCTAL CHARACTERS. INCORRECT REQUEST CARD FORMAT.

SET JUMP KEY 2 TO IGNORE THIS CARD AND CONTINUE PROCESSING WITH NEXT CARD.

IF INPUT IS FROM READER, CORRECT AND RELOAD ERROR CARD, START.

b. ILLEGAL CHARACTER IN FIELD. INCORRECT REQUEST CARD FORMAT.

SET JUMP KEY 2 TO IGNORE THIS CARD AND CONTINUE PROCESSING WITH NEXT CARD.

IF INPUT IS FROM READER, CORRECT AND RELOAD ERROR CARD, START.

Refer to Section 3.2.2 for tape input comments.

3.2.7 Illegal Tape Type

ILLEGAL TAPE TYPE REQUESTED. CORRECT $P_3$ ON FUNCTION CARD AND REINITIATE JOB.

The third parameter, type of data tape to be processed, on the DROPSA function card is illegal. Acceptable codes for this field are: FS, BB, or R.

3.2.8 Parity Error

PARITY ERROR ON PROCESS TAPE. REINITIATE JOB.

Data tape is probably bad.
3.2.9 Tape Type Error

TAPE TO BE PROCESSED IS NOT SAME AS REQUESTED ON FUNCTION CARD.

OCTAL DUMP OF INCORRECT RECORD ON PROCESS TAPE FOLLOWS. CORRECT P_3 ON FUNCTION CARD AND/OR CHANGE PROCESS TAPE. REINITIATE JOB.

It appears that either

1. the third parameter, process tape type, on the DROPSA function card is incorrect; or

2. the wrong process tape was mounted.

It is possible to check the next record by gently depressing the start key.

3.2.10 No End-of-File Record on Recording Tape

FOUR ILLEGAL RECORDING TAPE RECORDS HAVE BEEN READ.

ASSUMING EOF.

At this point, DROPSA will assume that the Recording Tape being processed does not contain an end-of-file record and that all good data on the tape has been processed.

3.2.11 Terminal Comment

DROPSA HAS COMPLETED OPERATIONS. PLEASE LIST TAPE ON LOGICAL UNIT_____.

DROPSA will now return control to COP. The output tape should be listed.
3.3 Control Cards

3.3.1 Function Card

*N DROPSA P₁ P₂ P₃ P₄

where: N = Unit designated for storage analysis (if blank, storage analysis is written on Tape Unit 3).

P₁-P₄ = same as described in Section 3.1.

3.3.2 Data Processing Requests

The data processing requests can be on punched IBM cards or their images recorded on magnetic tape. There are two types of input cards.

3.3.2.1 Data Request Cards

These cards are used by DROPSA to determine which message types on the process tape are to be extracted, reduced, and listed. The format for this card is:

```
LIST M₁
```

<table>
<thead>
<tr>
<th>Column</th>
<th>Content</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>LIST</td>
<td>Name of request</td>
</tr>
<tr>
<td>6-7</td>
<td>M₁</td>
<td>Octal number representing acceptable message type of data to be extracted and processed. If M₁ is blank, all messages on the tape will be listed in their pre-specified formats.</td>
</tr>
</tbody>
</table>
3.3.2.2 Termination Request

This card indicates to DROPSA that all request cards have been read. The format for this card is:

<table>
<thead>
<tr>
<th>Columns</th>
<th>Content</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>HALT</td>
<td>Terminal card</td>
</tr>
</tbody>
</table>

3.3.3 Operational Card Deck

Other "Processing Request" Cards
3.4 Input Tape

Any one of the following three tapes can be used as an input to DROPSA:

a. Bird Buffer Simulated Data Input Tape with one end-of-file record indicating the end of data written by the SIPSA program;

b. Bird Buffer 1604 Transfer Tape for Flight Support Simulation with two end-of-file records indicating the end of data written by the SIPSA system;

c. Bird Buffer Recorded Output Data Tape written by SIMSTN. This tape will not contain an end-of-file record. Four consecutive illegal records indicate end of data.

The formats of these tapes are given in TM-(L)-734/015/00, Computer Program Design Specifications for the Simulation of the Augmented SCF Environment at the STA and CPDC (Milestone 4). (See Section 9.2.)

3.5 Output Tape

DROPSA output consists of formatted data, listed on-line by the 1612 printer and/or on a listable magnetic tape.

3.5.1 Headers

XX TAPE PROCESSED BY DROPSA

where XX = process tape type: BB, FS, or R.

3.5.1.1 Bird Buffer Simulated Data Input Tape

```
    XX TAPE PROCESSED BY DROPSA

    where XX = process tape type: BB, FS, or R.

    3.5.1.1 Bird Buffer Simulated Data Input Tape

    TAPE I.D. =   ____________

    STATION  VEHICLE NO.  REVOLUTION  PREPASS  TRK  TLM  TLM
    XXXXXXXX  XXXX  XXX.X   X   X   X   XXX

    (BCD)    (BCD)    (BCD)    (    O   C   T   A   L   )
```
3.5.1.2 1604 Transfer Tape for Flight Support Simulation

**BB-1604 TRANSFER DATA**

<table>
<thead>
<tr>
<th>STATION VEHICLE NO.</th>
<th>ANTENNA1 T1</th>
<th>DELTA</th>
<th>ANTENNA2 T2</th>
<th>REVOLUTION NO.</th>
<th>DATE</th>
<th>DELTA REVOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXXXXXXXXXXXXXXXXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td>XXXXXXXXXX</td>
<td>XXXX</td>
<td>XXXX.X</td>
</tr>
<tr>
<td>(BCD)</td>
<td>(BCD)</td>
<td>(BCD)</td>
<td>(BCD)</td>
<td>(DEC.)</td>
<td>(DEC.)</td>
<td>(DEC.) (BCD)</td>
</tr>
<tr>
<td>(M.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(DAY NO. YR.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TIME-A.M. (or)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>P.M.</td>
</tr>
</tbody>
</table>

3.5.2 Messages

DROPBSA references the following modules to process, format, and output the message data:

a. SOLVET—site-on-line and vehicle time messages. See TM-(L)-734/018/00 (Section 9.4) for the output message formats.

b. STEXT—text and status/alarm messages. See TM-(L)-734/019/00 (Section 9.5) for the output message formats.

c. STRK—tracking message. See TM-(L)-734/021/00 (Section 9.6) for the output message formats.

d. SOCT—octal dump of other messages. See TM-(L)-734/020/00 (Section 9.7) for the output message format.

3.6 Jump Key Settings

SLJ Key 2 is used for error recovery action (See Sections 3.2.2, 3.2.3, and 3.2.6).

4.0 METHOD

The system is brought into the computer from the augmentation SUM Master Tape by the Utility Control Program. Initializations are performed and status of the equipment to be used is checked. The request cards are read into core and checked for correct format and legal request type. Table MODTAB
is used for legality checking the request cards (see Appendix B). A schedule is prepared containing the legal message types requested for listing and the address of the module (see Sections 9.4, 9.5, 9.6, and 9.7) which will reduce and list the data for each message type requested. Card reading terminates when a "HALT" card is read. If 30 cards are read without encountering a terminal card, these 30 requests are processed; then the succeeding request cards are read, checked, and processed in the same manner.

DROPSA references its subroutine, SDRP (see Appendix A), to read the input tape and extract and process the requested message data.

All tapes are rewound with interlock at the completion of the run.

5.0 RESTRICTIONS

5.1 Equipment

Three 1607 tape units.
On-line printer.
Card reader.

5.2 Subroutines

DROPSA utilizes the following subroutines contained on the augmentation SUM Master Tape:

<table>
<thead>
<tr>
<th>TAPE</th>
<th>SOCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOT</td>
<td>STRK</td>
</tr>
<tr>
<td>INPUT</td>
<td>STEXT</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>SOLVET</td>
</tr>
<tr>
<td>OUTERR</td>
<td></td>
</tr>
</tbody>
</table>

5.3 Output Volume

The amount of data listed by DROPSA is dependent upon the amount of data on the input tape which is requested for listing.
5.4 Reference Pool Items

The following Reference Pool items are used:

ABCD  SBCD
MDBCD  TTTT

5.5 Input Tape

End of good data on the process tapes must be indicated to DROPSA in the following way:

- Two consecutive end-of-file records on the 1604 Transfer Tape,
- One end-of-file record on the 160-A Simulation Tape,
- One end-of-file record or four illegal records on the Recording Tape.

6.0 TIMING

DROPSA requires approximately one minute to process all messages contained on a 300 record input tape.

7.0 STORAGE REQUIREMENTS

<table>
<thead>
<tr>
<th></th>
<th>Decimal</th>
<th>Octal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Program</td>
<td>606</td>
<td>1134</td>
</tr>
<tr>
<td>Tables and Constants</td>
<td>425</td>
<td>651</td>
</tr>
<tr>
<td>Subroutines</td>
<td>2432</td>
<td>4607</td>
</tr>
<tr>
<td>Total Storage Requirement</td>
<td>3470</td>
<td>6614</td>
</tr>
</tbody>
</table>

8.0 VALIDATION TESTS

8.1 Test 1

8.1.1 Input

All $\binom{26}{10}$ legal message types (1-328) were requested from the card reader for processing from a Bird Buffer Recording Tape with no end-of-file
record. Each message type was requested with an individual card. Tape Unit 7 was requested for output.

8.1.2 Results

All data was processed correctly and the data was listed as presented in Section 3.5.

8.2 Test 2

8.2.1 Input

The input for this test was the same as that used for Test 1, with the following exceptions:

a. The input tape was placed on a different unit, and
b. A LIST request card was used, rather than an individual card for each message type.

8.2.2 Results

Same as for Test 1.

8.3 Test 3

8.3.1 Input

All legal message types were requested for listing, except message type 143, tracking data. The control deck, which consisted of more than 30 request cards (some of the request cards were duplicated), was prestored on tape to check out the tape input option. A 1604 Transfer Tape with three files of good data was used as the process tape. Both on- and off-line output was requested.

8.3.2 Results

Same as Test 1.
8.4 Test 4

8.4.1 Input

The control deck, which consisted of 30 request cards with at least one request for each legal message type, was read from the card reader. A 160-A Simulated Data Tape was used as the process tape. Only tape output was requested.

8.4.1 Results

Same as Test 1.

8.5 Error Checks

The following errors were built into a series of DROPSA runs:

a. Illegal request code,
b. Incorrect request card format,
c. Select error, and
d. Illegal tape type.

All possible recovery actions were exercised for these errors and were found to operate correctly. See Section 3.2 for a more complete description of these errors and the possible recovery actions.

9.0 REFERENCES

9.1 CPL Catalogue Number 75919


9.3 TM-(L)-834/000/01 and 01A, Bird Buffer Combined Milestone 3 and 4, System Development Corporation, 17 December 1962.

9.5 TM-(L)-73/4/019/00, Text and Status/Alarm Message Processor (STExT), System Development Corporation, 12 March 1963.


10.0 FLOW DIAGRAM
Determine I/O calls from input parameters. Check status of equipment to be used. Clear terminal flag and SCHEDULE count. Clear registers.

REDICRD

INPUT
Read one card
Normal exit

LISTOUT
List card

Is this a request card

Yes
Does card contain legal request code

Yes
Store processing module address and request code in SCHEDULE.

No
ILLCODE

No

Yes

Update SCHEDULE count

Does SCHEDULE contain 30 requests

Yes

PROCESSTERM

No

CHKTERM
CHK TERM

Is this a terminal card

Set terminal flag

Does SCHEDULE contain any requests to be processed

PROCESS

SDRF  Process data requests

TAPE  Rewind process tape

Is terminal flag set

Clear SCHEDULE count

TERM OP  REDI CRD

FORM ERR

TERM OP

Normal exit

Error exit

Normal exit

No

Yes

No

Yes

No
Where requests read from tape or card reader

TERMINAL OP

ERROR

TAPE
Rewind with interlock request tape

Normal exit

TERMINAL OP1

TAPE
Rewind with interlock process tape

Normal exit

LISTOUT
Inform operator of completion run

EOT
EOT and rewind with interlock output tape

EXIT
APPENDIX A

1.0 CONTENTS

This appendix contains descriptions and flow diagrams of subroutines which were programmed as an integral part of DROPSA.

1.1 Name

CONZRO

1.1.1 Description

This routine checks the contents of the A register for leading BCD and octal zeroes (128 and 00) which are converted to BCD blanks (208), and imbedded octal zeroes which are converted to BCD zeroes (128). The result is left in the A register.

1.1.2 Calling Sequence

A register = data word to be checked.

L NOP
SLJ 4 CONZRO

1.1.3 Registers Destroyed

None

1.1.4 Subroutines Used

None

1.1.5 Flow Diagram (See Page 25)

1.2 Name

INPERR
1.2.1 Description

This routine diagnoses request card read errors incurred by the INPUT utility routine, prints appropriate error comments on-line, and executes recovery action initiated by the operator.

1.2.2 Calling Sequence

A register = failing format specification
Q register = error code

\[
\begin{align*}
L & \quad SLJ \quad 4 \quad \text{INFERR} \\
\text{ZR} & \quad 0 \quad P_1
\end{align*}
\]

where:

- \( P_1 = 0 \) if input is from card reader.
- \( P_1 \) = tape unit number if input is from a prestored tape.

1.2.3 Registers Destroyed

A register
Q register
Index registers 2, 3, and 4.

1.2.4 Subroutines Used

LISTOUT
TAPE
OUTPUT
OUTERR

1.2.5 Flow Diagram (See Page 26)

1.3 Name

LISTOUT
1.3.1 Description

This routine lists a line of data on tape and/or on the printer, ejects a page if the line counter indicates a full page of data, and updates the line counter.

1.3.2 Calling Sequence

A register + index register 2 = base address of data line to be listed.

Index register 6 = number of lines previously listed on this page.

\[
\begin{align*}
L & \quad \text{SLJ 4 LISTOUT} \\
P_1 & \quad 0 \quad 1000P_2 + P_3
\end{align*}
\]

where:

\( P_1 = 00 \) if this is not an on-line comment.

\( = 01 \) if this is an on-line comment. (If the on-line output option is requested on the DROPSA function card, then this parameter is ignored.)

\( P_2 \) = number of words to be listed.

\( P_3 \) = rightmost print position.

1.3.3 Registers Destroyed

A register

Q register

1.3.4 Subroutines Used

OUTPUT

OUTERR

1.3.5 Flow Diagram (See Page 30)
1.4 Name

SDRP

1.4.1 Description

This routine reads the input tape, extracts, and processes the requested message types.

1.4.2 Calling Sequence

\[
\begin{align*}
&L \quad SLJ \quad 4 \quad SDRP \\
&ZRF \quad 0 \quad 0 \\
&L+1 \quad O1 \quad CN \quad TN \\
&ZRF \quad UN \quad CC \\
&L+2 \quad P_1
\end{align*}
\]

where:
- \(CN\) = channel number of output tape.
- \(TN\) = tape unit number of output tape.
- \(UN\) = cabinet number of output tape.
- \(CC\) = 128 (double space).
- \(P_1\) = 0 for output on tape only.
  = 138 for output on tape and printer.

1.4.3 Registers Destroyed

A register
Q register
Index registers 2, 3, 4, 5, and 6.

1.4.4 Subroutines Used

LISTOUT  CONZRO  STRK  OUTPUT
TAPE  TYPEPCD  STECT  OUTERR
UNON  SOCT  SOLVET

1.4.5 Flow Diagram (See Page 31)
1.5 Name

TYPEBCD

1.5.1 Description

This routine converts the contents of the A register from 161 typewriter code to BCD. Leading zeroes are converted to BCD blanks. The result is left in the A register.

1.5.2 Calling Sequence

A register = data word in 161 typewriter code to be converted to BCD.

\[ \text{L \quad NOP} \]

\[ \text{SLJ \quad 4 \quad TYPEBCD} \]

1.5.3 Registers Destroyed

Q register

1.5.4 Subroutines Used

None

1.5.5 Flow Diagram (See Page 41)

1.6 Name

UNON

1.6.1 Description

If the A register is filled with BCD Blanks, the BCD configuration for "UNKNOWN" is stored, right justified, in the A register. Otherwise, the value is simply right justified.
1.6.2 Calling Sequence

A register = data word in BCD.

L NOP
SLJ 4 UNON

1.6.3 Registers Destroyed

None

1.6.4 Subroutines Used

None

1.6.5 Flow Diagram (See Page 42)
CONZRO

Save index registers 3 and 4 and Q register

Convert leading octal zeroes and BCD zeroes to BCD blanks

Convert imbedded octal zeroes to BCD zeroes

Restore registers
INPERR

Save failing format specification and error code

Determine type of error

Equipment not ready

INPERR1

Select error

INPERR2

Read error

INPERR3

No input description

INPERR4

Too many octal characters

INPERR5

Illegal character in field

INPERR6

Too many digits in decimal scaling

INPERR7

Number out of floating point range

INPERR8
INPERR1

Save INPERR entrance address

Were cards read from reader or tape

Reader

Tape

Select proper tape

Is tape ready

No

Yes

Set up parameters to exit to read or reread card (REDICRD)

INPERR2

LISTOUT Request operator check of input parameter

STOP

INPERR1

INPERR3

LISTOUT Inform operator of read error and recovery action

STOP

INPERR32
INPERR3

LISTOUT
Inform operator of read error

LISTOUT
Inform operator of recovery action

STOP

INPERR32

Were cards read from reader or tape

Reader

INPERR1

TAPE
Backspace one record

Error
exit

Normal exit

INPERR1

INPERR4

LISTOUT
Inform operator of no input description error

INPERR41

LISTOUT
Request dump

STOP
INPERR5

LISTOUT
Too many octal characters in field

INPERR51

LISTOUT
Incorrect request card

LISTOUT
Inform operator of recovery action: set SLJ KEY 2 to ignore card

STOP

Ignore request and read next request; i.e. is SLJ KEY 2 set

Yes

INPERR1

No

INPERR32

INPERR6

LISTOUT
Illegal character in field

INPERR51

LISTOUT
Too many digits in decimal scaling

INPERR41

INPERR7

LISTOUT
Number out of floating point range

INPERR41
LISTOUT

Save address of area to list. Save line format. Save index register 3

Is all data to be listed on tape and printer

- Yes
- No, tape only

Is this an error comment, which should be listed on the printer

- No
- Yes

Set up printer output call

LISTOUT 1-2

OUTPUT
List data

Write error

OUTERR
Diagnose error

Normal exit

Increment line counter

LISTOUT 2-2

OUTPUT
Eject page

Error exit
Normal exit

OUTERR
Diagnose error

LISTOUT OUT3

Is page full

- Yes
- No

Restore index register 3

Clear line counter
Set up processing tape call
Save on-line output option

Are all messages on tape to be listed
No

Set up parameter to search SCHEDULE for messages to be listed

SRCHSCED +2

LISTOUT
Eject page and list tape type header

Was legal tape type requested on DROPSA function card
No

Save address of routine to check type of record read

CLRBUF

Yes

Set up parameters to list all messages

RNG TAPE
Inform operator of illegal tape type request

LISTOUT

STOP
15 March 1963

CLRBUF

Clear read buffer

READ-TAPE

Read one record from processing tape

TAPE

Parity error

READERR

Inform operator of parity error

STOP

Normal exit

Has entire record been read

No

Yes

End of file

Transfer tape

DBLEOF

Yes

Recording tape

No

Is channel still active

Transfer tape

FSTAPE

No

Yes

Deactivate channel

Transfer tape

BBTAPE

Bird buffer tape

Recording tape

RTAPE
BBTAPE

Legal bird buffer record

Yes

Station data record

STADATA

Tape ID record

TAPID

Pass control record

PASCONT

No

RONGTAPI

End of station transmission record

CLRBUF

End of data record

CLRBUF

TAPID

TYPEBCD
Convert tape ID from typewriter code to ED

LISTOUT
List tape ID

CLRBUF

STADATA

Save maximum number of 12-bit data words in record from TIM computer

Save maximum number of 12-bit data words in record from TRK computer

Save 150-A and 1504 locations of first data word

CONT
15 March 1963

PASCONT

Pick up pass control data

CONZRO
Convert leading octal and BCD zeros to blanks and imbedded octal zeros to zeros in vehicle number

CONZRO
Convert leading octal and BCD zeros to blanks and imbedded octal zeros to zeros in revolution number

UNON
Check for unknown station and right-justify

LISTOUT
List pass control data

CLRBUF

RTAPE

Legal recording tape data record

Search data record backwards to determine maximum number of 12-bit data words in record

Save maximum number of 12-bit data words in record

Save 160-A and 1604 locations of first data word

Clear end of file counter

CONT

NOBOFR

Yes

No
First 12-bit data word = 7777B
Yes
Initialize word counter to one

First 12-bit data word last one in this location
Yes
Increment location indicator

Have all data words in this message been counted
Yes
CONTFIN
No
Increment word counter

Have 4, 12-bit data words been counted in this location
Yes
A
No
CONT2
CONTFIN

Save word count

Decrease number of words to be checked

Have all words been checked

Yes

Pick up 160-A and 1604 locations of first data word from TRK computer

No

CONTFIN1

Save number of words left to check

Save 160-A and 1604 locations of first data word of next message

Are all messages to be listed

Yes

Is this a legal message type

Yes

MODSET

No

Is this message to be listed

No

DOAGAIN

Yes

MODSET
15 March 1963

MOSET

Pick up address of
processing module

MOD

SOCT
Octal dump module

STEXT
Text data processing module

STRK
Tracking data processing module

SOLVET
Time data processing module

DOAGAIN

Has all data in record been processed
Yes
No

CLRBUF

Pick up 160-A and 1604 locations of first data word of next message

CONT
**CHKBBUF**

- Bird buffer data record
  - Yes
  - Any data from TRK computer to be processed
    - Yes
    - Save number of 12-bit data words from TRK computer
    - Pick up 160-A and 1604 locations of first data word from TRK computer
  - No
  - CLRBUF

**RLGTAP1**

- LISTOUT
  - Inform operator of discrepancy between type of record read & type of tape requested
    - OUTPUT
      - Convert record data to hollerith
      - LISTOUT
        - List record
        - LISTOUT
          - Inform operator of recovery action
            - STOP
            - CLRBUF
Have two consecutive EOF records been read

Have 4 consecutive illegal recording tape records been read

LISTOUT
Inform operator that EOF will be assumed
15 March 1963

**TYPEBCD**

1. Save index registers 3 and 4

2. **SPAC**
   - **Zero character**
     - Yes: Convert to BCD blank
     - No: **CONV**
6. **CONV**
   - Convert non-zero character to BCD
   - Have 8 characters been converted
     - Yes: Go to **RESTORE**
     - No: Go to **RESTORE**

7. **RESTORE**
   - Restore index registers 3 and 4

8. Have 8 characters been converted
   - Yes: Go to **RESTORE**
   - No: Go to **RESTORE**
UNON

Save Q register

Yes

Substitute BCD for "UNKNOWN"

No

Right justify value in A

UNON2

UNON2

Restore Q register
APPENDIX B

1.0 The 26 message types listed in TM-(L)-834/000/01 and OIA (See Section 9.3) can be requested for listing. Table MODTAB in DROPSA contains the legal message types, 01-32 (octal), and the module address for processing each of the messages.

<table>
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<tr>
<th>38</th>
<th>24</th>
<th>14</th>
<th>0</th>
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<tr>
<td>Message Type</td>
<td>Processing Module Address</td>
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</tbody>
</table>

MODTAB Format

The following procedure can be used to modify this table in order to add or delete message types to be recognized by DROPSA:

a. Modify the execution address of card number 137 to contain the total number of legal message types plus one.

b. Modify table MODTAB:

1) Delete Message Type - Remove the two cards containing the message type to be deleted and the name of its processing module.

2) Add Message Type - Insert two cards containing the message type to be added and the name of its processing module.

1.1 EXAMPLE 1: Assume 25 legal message types.

Message Type 52₈, to be processed by the SOCT module, is to be added to MODTAB.

a. Change card number 137 to read:

```
ENI 3 27
```

Index 3 now contains the modified number of legal message types +1.
b. Add the following two cards to the end of MODTAB:

```
ZR0  0  52B
ZR0  0  SOCT
```

DROPSA will now recognize 52 as a legal message type.

1.2 EXAMPLE 2: Assume 25 legal message types.

Message types 1, 2, 3, 22, 23, 24, and 27 are to be deleted. All of these messages are processed by the SOCT module.

a. Change card number 137 to read:

```
ENI  3  19
```

b. Delete the following cards from MODTAB:

```
ZR0  0  1
ZR0  0  SOCT
ZR0  0  2
ZR0  0  SOCT
ZR0  0  3
ZR0  0  SOCT
ZR0  0  22B
ZR0  0  SOCT
ZR0  0  23B
ZR0  0  SOCT
ZR0  0  24B
ZR0  0  SOCT
ZR0  0  27B
ZR0  0  SOCT
```

DROPSA will now reject requests for message types 1, 2, 3, 22, 23, 24, and 27.
### DISTRIBUTION

**(EXTERNAL)**

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15 March 1963

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System Development Corporation, Santa Monica, California

1604 SIMULATION PROGRAM DESCRIPTIONS
MILESTONE 11 DATA REDUCTION AND OUTPUT PROCESSING SYSTEM CONTROL PROGRAM FOR AUGMENTATION (DROPBA).
Scientific rept., TM(L)-734/017/00, by J. G. Hillhouse. 15 March 1963, 44p. (Contract AF 19(628)-1648, Space Systems Division Program, for Space Systems Division, AFSC)

Unclassified report


Reports that DROPBA (Data Reduction and Output Processing System Control Program for Augmentation) is used to reduce data on the two simulated data input tapes written by the SIPSA (Simulated Input Preparation System for Augmentation) system and the recording tape produced by SIMSTN (Augmented Tracking Station Simulation Program).