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APPENDIX D

Strap-1 prints error marks in the right-most columns of the assembly listing, showing actual or probable coder and/or machine errors. These error marks, constituting the twenty-six letters of the alphabet, and some special characters (given at the end of the list) are explained below:

A
1. No characters are given with an A or IQS entry mode in a DD statement.
2. Too many address fields were given.

B
1. The byte size of this instruction is > 8, and has been assembled modulo 8.
2. The byte size of a decimal instruction ≠ 4, but has been left at the specified value modulo 8.
3. A or IQS byte size in DD statement is>12, and has been assembled modulo 8.

C
A negative field (address, index, field length, etc.) has been complemented.

This complementing takes place prior to the truncation described under "V", if any.

D
Data error in DD or DDI.

The data has been set to zero.

E
Entry mode error in DD or DDI.

Entry mode (10) is assumed.

F
1. The given field length is > 64, and has been assembled modulo 64.
2. Field length of a VFL binary multiply - or divide-type order is > 48. It has been left at the specified value modulo 64.

G
A "go-to" type order, i.e., a branch or END card, has a transfer address < 32 and I index 0.

H
This card has an illegal name (a non-alphanumeric character is present, the character has been ignored).

I
A branch on indicator, with indicator numerically specified, has indicator numeric > 63.

The indicator has been computed modulo 64.

J 1. There is an illegal punch on this card.

2. There is an illegal character in some field on this card (if an illegal numeric occurs in a data field of radix 2 through 9, the field is set to zero; in all other cases, the illegal character is printed as an error mark just to the right of any other error marks pertaining to the field, and ignored in computing the value of the field.)

K A RTT-error has been detected in reading tape 2 on this card.

L 1. The location counter is out of range as a result of this instruction. If < 32, it has not been changed; if $> 777777.77_8$, it has been taken modulo 1000000.00_8.

2. An SLC address contains an integer.

M 1. The given mode is not consistent with the given operation or vice versa, e.g., M + 1 (N),... The mode, FL, and BS are ignored.

2. No mode given with DD or DR -- N is assumed.

3. No mode given with DDI -- (BU, 24, 8) is assumed.

4. An operation which could be either VFL or floating point has no overruling mode and a numeric address. VFL is assumed.

N Error in integer i.e., (.n) entry.

O 1. Offset + field length - byte size (if signed) on this op is > 128. None of the three quantities is changed.

2. Decimal offset is not divisible by 4, but is left unchanged.

P Conditional branch has K field > 1.

The given K field is taken modulo 2.

Q 1. Illegal OP1 or OP2 in progressive indexing. In either case, OP2 is ignored.

2. Illegal OP3 in CW. OP3 is ignored.

3. Pseudo-op has been specified in an EXT field. The requested field has been set to 0.

R Radix is out of range R = 10 is used.

S Illegal OP after an SIC order. (Only half-word branch orders are permitted.

The OP has, however, has been assembled as requested.

T An index is given with LVS, or an immediate index OP, which are non-indexable.

U VFL decimal multiply or divide has been specified. (There are no such OPs.)

The OP has been assembled as requested but it must be remembered that it acts as a LFT order.

V. 1. Overflow in an address field; the field has been truncated if necessary to fit the number of bits available.

2. A DD with entry mode A or IQS has a byte size which is too small, i.e., <6 or <8 respectively.

W The operation specified here is non-existent. The full-word instruction SIC, ϕ15; BE, 0 has been inserted here.

X 1. An address field on this card cannot be completely evaluated. E.g., due to a too-complicated chain of SYN cards, etc. The computation has been completed as far as possible.

2. A symbol specified on a **PUNSYM** card does not occur in the program.

Y There is a symbol on this card containing more than **six** characters.

Only the first six are used.

Z 1. No address or name field has been specified on a SYN or DDI card; or a SYN card is not computable by pass 3.

2. The second half word address of an Input-Output op is <32.

) No right parenthesis in a field; 2 or more left parentheses before first right parenthesis.

\+ Arithmetic has been used in the address field of a VFL immediate OP (not allowed); or, a symbol defined by a DDI has been used in an arithmetic expression in a VFL immediate address field.

The arithmetic was performed in binary unsigned.

6 A symbol on this card has six characters and cannot be tailed.

OTHER Characters other than the error marks listed above may be printed in the right-most columns of the assembly listing as an indication that these characters were used in fields where they are not legal. For example, if the letter "G" were used in a hexadecimal data field, "G" would appear as an error mark at the right of the listing.

Note: The coder is reminded that the printout of all except certain non-coder error marks (viz., K, J) can be suppressed by prefixing the OP field with the symbol ϕ. In the case duplicate error marks appear, more than one error of the same type has been made. Individual error marks A, B, C,... may be suppressed by the use of the instruction
SEM, A,B,C,...
All may be suppressed by SEM alone.
Any of the suppressed error marks may be restored by the instruction REM which works in a similiar manner. Again, J, K, and illegal punches cannot be suppressed by SEM.