UNIVAC SPLS

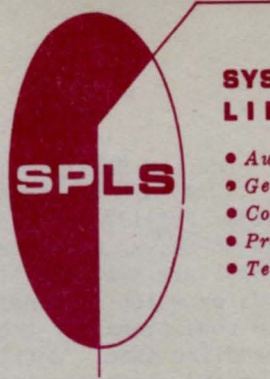**SYSTEMS PROGRAMMING
LIBRARY SERVICES**

● *Automatic Programming Systems*
● *Generalized Programming Systems*
● *Copies of Program Tapes and Decks*
● *Programming Information Exchange*
● *Technical Program Documentation*

November 30, 1966

UNIVAC 1004 SYSTEMS
Programming Information Exchange
Bulletin 18 Rev. 1

UNIVAC 1004 SYSTEMS *Programming Information Exchange Bulletin 18 Rev. 1, UP 3881.18 Rev. 1 summarizes all* UNIVAC 1004 *items released to date from Systems Programming Library Services. This is a Standard Library Item (SLI).*

The material listed in this P.I.E. is divided as follows:

- A.   80-Column Library Items- Page 1
- B.   90-Column Library Items- Page 2
- C.   80/90-Column Library Items- Page 4
- D.   1004 TIPS- Page 12
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- F.   Recap, by Order of "UP" Number, of Current 1004 P.I.E. Bulletins — Page 17
- G.   Current Program Forms and Pertinent Stationery Stock Items — Page 17

A.   80-COLUMN LIBRARY ITEMS

U Number	Title	UNIVAC 1004 Releasing Document	Date of Release
1. UT-2543 Rev. 1 (SLI)***	80-Column Reference Manual, 1004 Card Processor (105 pp.)	Product Announcement	June, 1962

The 1004 Card Processor, 80-Column, edits and accumulates totals from data punched into 80-column cards and prints the results in any desired format. Built-in abilities to perform arithmetic, transfer, and compare operations, and reliable fast-access magnetic core storage provide a high degree of data processing efficiency. The 1004 Processor consists of a card reader, a processor, and a printer housed in a single compact unit. The unit is built to assure ease of operation with centrally located operating controls. A card punch can be included as an optional output unit.

2. U-3525A.13B (SLI)***	1004 TIP, Sequence Checking Alphabetical-Numerical Designations — 80-Column, 1004 Card Processor (3 pp.)		

See Section D. 1004 TIPS, page 12 of this P.I.E., UP-3881.18 Rev. 1.

3. U-3643 (SLI)***	Code Image Addenda to 80-Column Reference Manual, UT 2543 Rev.1, 1004 Card Processor (12 pp.)	Sales Bulletin	December 26, 1962

Code Image is an optional feature for factory or field installation to an 80-Column 1004 Card Processor. It is supplied in two forms: 1, Code Image Read; 2, Code Image Read and Punch. These features make it possible for any 80-Column 1004 system to process cards punched with machine code or with nonstandard card codes.

*This item must be ordered from Manager, S.P.L.S., Philadelphia.
**Indicates total number of pages in underlined updated manual.
***(SLI) Standard Library Item -- Abbreviation indicating item automatically included when customer or internal name is placed on S.P.L.S. mailing lists and a "Library is provided."

4. UP-3873 (SLI)***   Add and Subtract, 80-Column,   Library Memo 4   April 26, 1963
                            1004 Card Processor (15 pp.)
     This pamphlet provides details and examples of the Add and Subtract
     process of the 1004 80-Column Card Processor. The functions of the
     one-digit serial adder are described in detail, and examples are
     given of the methods by which it handles both normal and complemented
     addition. Overflow conditions for true addition are discussed, along
     with methods for handling them. Carries on complemented addition
     used for subtraction and algebraic addition of operands with unlike
     signs are also discussed. The effects of the inclusion of non-
     numeric and special character codes are described in order to prevent
     unwanted carries or other undesirable effects.

5. UD1-876 (SLI)***   1004 80-Column Processor   Library Memo 21   July 8, 1964
                            Combined Storage/Character
                            Code Card (formerly UP 3866)
     One side of the card contains illustrations of the storage areas which
     are automatically allocated by the Processor for input/output operations.
     Included are areas allocated to optional equipment and features such as
     Read/Punch units and the Code Image Feature (80-column only). The
     opposite side of the card contains the complete Character Code set for
     the 1004 Card Processor.

6. UP-4023 (SLI)***   1004 Systems Translation of   Library Memo 36   June 25, 1965
                            80-Column Punching (16 pp.)
     This manual provides tables for the interpretation of all possible
     80-column punching combinations by 1004 Systems. It includes a Preface
     describing the use of the tables, a chart of standard punching, and a
     condensed translation table.

B. 90-COLUMN LIBRARY ITEMS

1. UT-2541 Rev. 1 (SLI)*** 90-Column Reference Manual,   Product Announcement June, 1962
                             1004 Card Processor (108 pp.)
     The 1004 Card Processor, 90-Column, edits and accumulates totals from data
     punched into 90-column cards and prints the results in any desired format.
     Built-in abilities to perform arithmetic, transfer, and compare operations,
     and reliable fast-access magnetic core storage provide a high degree of
     data processing efficiency. The 1004 Processor consists of a card reader,
     a processor, and a printer housed in a single compact unit. The unit is
     built to assure ease of operation with centrally located operating controls.
     A card punch can be included as an optional output unit.

2. UD1-960 (SLI)***   1004 90-Column Processor   Internal Memo   May 20, 1965
                            Combined Storage/Character
                            Code Card (formerly UP 3867
                            released on Library Memo 21)
     One side of the card contains illustrations of the storage areas which
     are automatically allocated by the Processor for input/output operations.
     The opposite side of the card contains the complete Character Code set for
     the 1004 Card Processor.

3. U-3525A.3B (SLI)***   1004 TIP, Delete Zero Balance,
                            90-Column, 1004 Card Processor
                            (4 pp.)
     See Section D. 1004 TIPS, page 12 of this P.I.E., UP-3881.18 Rev. 1.

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4. UP-3876 (SLI)***   306-6 Key Punch, 90-Column,   Library Memo 6   May 31, 1963
                            1004 Card Processor (4 pp.)
    This item provides General Descriptions and Operating Instructions
    for the 306-6 Key Punch which has been designed for use with the
    1004 90-Column Card Processor. The keyboard has 44 characters of
    which 8 are the special characters most frequently used by the 1004.
    All 44 characters are in 90-Column card code.

5. UP-3879 (SLI)***   Add and Subtract, 90-Column,   Library Memo 8   July 25, 1963
                            1004 Card Processor (12 pp.)
    This manual provides details and examples of the Add and Subtract
    process of the 1004 90-Column Card Processor. The functions of the
    one-digit serial adder are described in detail, and examples are
    given of the methods by which it handles both normal and complemented
    addition. Overflow conditions for true additions are discussed, along
    with methods for handling them. Carries on complemented addition
    used for subtraction and algebraic addition of operands with unlike
    signs are also discussed. The effects of the inclusion of non-
    numeric and special character codes are described in order to
    prevent unwanted carries or other undesirable effects.

6. UP-3953 (SLI)***   Standard Program with Summary   Library Memo 28   January 19, 1965
         .   Card Punching, 90-Column,
                            Reference Manual, 1004 Card
                            Processor (52 pp.)
    This manual shows that through the use of one Connection Panel
    permanently wired on a standard basis, a 1004 I -05 or -07 can
    produce a wide variety of reports from a wide variety of detail
    card forms. While a report is being run, summary cards can be
    produced.

7. UP-3961 (SLI)***   Standard Program with Summary   Library Memo 28   January 19, 1965
                            Card Punching, 90-Column,
                            Wiring Tabulation, 1004 Card
                            Processor (76 pp.)
    This is the technical wiring description supporting "UNIVAC 1004
    Standard Program with Summary Card Punching Reference Manual,
    90-Column, Description," UP-3953. UP-3961 contains the tabulation
    of the wiring of the Connection Panel for the Standard Program
    with Summary Card Punching for a UNIVAC 1004 I Card Processor.
    This tabulation gives the "point-to-point" (hub-to-hub) wiring
    for each connection. It also includes "wiring reference," i.e.,
    a reversed listing of the wiring for checking purposes.

8. UP-3963 (SLI)***   Standard Program with Summary   Library Memo 28   January 19, 1965
                            Card Punching, 90-Column,
                            Wiring Templates, 1004 Card
                            Processor (1 set of 4 sheets)
    UP-3963 concerns the use of Wiring Templates for the UNIVAC 1004
    Standard Program with Summary Card Punching, 90-Column. After
    wiring and verifying the wiring of a Standard Program Connection
    Panel, the final check is made with the four Wiring Templates.
    There is a template for each one of the four sections of the
    Connection Panel.

	U Number		Title	Releasing Document	Date of Release
9.	UP-3964	(SLI)***	Critical Path Method Reference Manual (90-Column), 1004 Card Processor (38 pp.)	Library Memo 43	October 31, 1966

This manual describes the usage and operations of the System and includes the Program description and Operating instructions for the five Critical Path Method programs: I-J TRANSLATE PROGRAM, CPM FORWARD and BACKWARD PASSES PROGRAM, DATE TRANSLATE PROGRAM, CPM PRINT PROGRAM and TIME STATUS PROGRAM.

	U Number		Title	Releasing Document	Date of Release
10.	UP-3997	(SLI)***	Critical Path Method Program Documentation (90-Column), 1004 Card Processor (61 pp.)	Library Memo 43	October 31, 1966

This manual contains the charts from which five program panels may be wired. Program documentation for each of the five boards includes instruction chart, function chart, address combine usage chart, selector usage chart(s), distributor chart, storage chart(s), and program explanation. Program explanations are included in this report to facilitate debugging. Exceptions to the above are: CPM PRINT does not have program explanation and TIME STATUS does not have a distributor chart.

C. 80/90-COLUMN LIBRARY ITEMS

	U Number		Title	Releasing Document	Date of Release
1.	UD1-723 Rev. 1 (SLI)***		Set - Plastic Template and Instructions (Formerly UP-3399 Rev. 1) (Standard Flowcharting Symbols.)	General Release	November 7, 1966

	U Number		Title	Releasing Document	Date of Release
2.	UP-2559 *		General Reference Manual Binder, 1004 Card Processor	Library Memo 10	September 10, 1963

This is a gold and green cataloguer used to house all 1004 software material. The Binder expands from $2\frac{1}{4}$" to $3\frac{1}{2}$" in order to contain a complete 1004 library. All requests for Binders and/or complete 1004 Libraries must have local managerial approval and be forwarded to S.P.L.S. directly.

	U Number	Title	Releasing Document	Date of Release
	UP-2559 *	General Reference Manual Binder, 1004 Card Processor	Library Memo 30	October 28, 1964

An additional Binder to house 1004 Library materials.

	U Number	Title
3.	UP-3525 Series (SLI)***	1004 TIPS--current 80/90-Column Tips (29 items are listed with abstracts in this bulletin beginning on page 12)

	U Number		Title	Releasing Document	Date of Release
4.	UP-3845	(SLI)***	Operating Instructions, 1004 Card Processor (78 pp.)**	Library Memo 10	September 10, 1963

These Operating Instructions can be divided into the following phases: Power Application; Connection Panel Installation; Form Feeding Control; Form Feeding; Printing; Card Feeding; Card Punching; and Processing Control.

	U Number	Title	Releasing Document	Date of Release
	UP-3881.4	Operating Instructions, Updating Package "A" (5 pp.)	P.I.E. 4	February 18, 1964

Updating Package "A" contains revisions to page OI 51. The description of the START and FEED switches has been changed to conform to the latest functioning of these switches. The revisions to OI 52 and 53 are merely realignment of copy.

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	U Number	Title	UNIVAC 1004 Releasing Document	Date of Release

5. UP-3871 (SLI)*** Data Flow, Transfer Operations, Library Memo 1 April 2, 1963
                        1004 Card Processor (16 pp.)
        An understanding of the sequence of events during a Transfer Operation
        can lead to the maximum use of the many abilities of the UNIVAC 1004.
        A thorough study of this item by concerned UNIVAC and Customer personnel
        will go far in helping to gain this understanding.

6. UP-3872 (SLI)*** Connection Panel, Wiring Library Memo 2 April 5, 1963
                        Recommendations, Conventions and
                        Rules, 1004 Card Processor (19 pp.)
        This pamphlet provides a fairly detailed guide to the wiring of
        Connection panels. The wiring of the panels will be easier and
        the results of the operation will be more positive if the
        recommendations, conventions, and rules contained in UP-3872
        are followed "to-the-letter."

7. UP-3874 (SLI)*** Compare Process, 1004 Card Library Memo 3 April 19, 1963
                        Processor (8 pp.)
        This pamphlet describes two important phases of the Compare process
        for the UNIVAC 1004 Card Processor. The phases include performing
        the comparison and testing the result of that comparison. The types
        of comparisons covered include: Numeric, Alphanumeric, Absolute,
        and Sign. Detailed descriptions are given of the use and wiring of
        Shunts in the 1004. An example is provided along with a wiring
        diagram. The example involves the running of a number of employee
        time cards with a minor total by employee, an intermediate total
        by department, and a major total by plant.

8. UP-3875 Rev.1 (SLI)*** Test Switch and Display Panels, Library Memo 14 February 12, 1964
                        1004 Card Processor (55 pp.)**
        This is an informative booklet containing vital information valuable
        to Programmers in Program Testing or "debugging." The various display
        masks provide information concerning all phases of the machine oper-
        ation. This is a vital element in the design concept of the UNIVAC
        1004 Card Processor -- contributing much to the versatility and
        flexibility of the system. UP-3875 Rev.1 is in two sections:
        (1) Test Switch Panel, (2) Display Panel. Both sections have intro-
        ductions and photographs of their respective Panels. Attention is
        called to the fold-out sheet which can be referred to while reading
        the text.

    UP-3881.6   Test Switch and Display Panels, P.I.E. 6 February 28, 1964
                        1004 Card Processor, Updating
                        Package "A" (5 pp.)
        Updating Package "A" contains revisions to page DP 10. The first
        paragraph under the subject "FEED" is revised to eliminate the influence
        of the Processor clear switch on this indicator. The description of the
        WAIT-JAM and TSP JAM indicators on pages DP-11 and 12 has been corrected.

9. UP-3877 (SLI)*** Timing Cycles, 1004 Card Library Memo 5 May 17, 1963
                        Processor (13 pp.)
        This pamphlet was prepared to further acquaint UNIVAC and Customer personnel
        with Timing Cycles of the UNIVAC 1004 Card Processor. Attention is called
        to the fold-out chart on the back cover which can be referred to while
        reading the text. This chart is intended to cover those aspects of cycle
        timing that may affect the Programmer. Although all machine functions are
        not represented, those of critical concern are covered.

10. UP-3878 (SLI)*** Program Testing, 1004 Card Library Memo 7 June 26, 1963
                        Processor (20 pp.)
        UP-3878 is a valuable booklet to Programmers of the UNIVAC 1004 Card
        Processor, concerning the vital function of program testing. The
        purpose of this booklet is to acquaint the Programmer with some
        problems he may encounter in program testing and some solutions to
        those problems.

11. UP-3880 (SLI)***   Double Punch-Blank Column Check,   Library Memo 9   September 3, 1963
       1004 Card Processor (8 pp.)

A Double Punch-Blank Column detection feature has been provided as an
optional input check for the UNIVAC 1004 Card Processor. This optional
feature is intended primarily for use with an 80-column 1004, but can be
utilized with a 90-column or Code Image 1004 for certain applications.
The input checks are made on the twelve punching positions in a single
column or frame as the card is being read.

12. UP-3882 (SLI)***   Form Control Tape, 1004 Card   Library Memo 12   December 20, 1963
       Processor (14 pp.)**

"Form Control Tape" explains the terminal points the program will use,
the tools supplied to make the tape, and the preparation of the tape for
an application. It also gives the maximum and minimum standards with a
table of form lengths from 2 1/8" to 11" for easy reference. The Form
Control Tape manual was written in a manner such that a programmer or
operator with little or no previous tape loop experience should be able
to prepare a tape for his program by following the step-by-step description
in the manual.

UP-3881.5   Form Control Tape, 1004 Card   P.I.E. 5   February 19, 1964
       Processor, Updating Package
       "A" (5 pp.)

Updating Package "A" contains revisions to FCT pages 5 through 8. This
is being done to advocate a 1/2 inch rather than a 1 1/2 inch splicing end.
The shorter splice allows the tape to bend more readily around the sprocket
wheel.

UP-3881.9   Form Control Tape, 1004 Card   P.I.E. 9   July 2, 1964
       Processor, Updating Package
       "B" (5 pp.)

Updating Package "B" revises FCT pages 3 through 6 to eliminate reference
to the Tape Splicing Block.

13. UP-3884 (SLI)***   Data Line Terminal Type 1,   Library Memo 11   October 14, 1963
       Reference Manual, 1004 Card
       Processor (55 pp.)**

This reference manual is issued in two parts. The first part contains the
following information: Introduction; Communications System Equipment;
UNIVAC 1004 Data Line Terminal; UNIVAC 1004 Basic Capabilities; UNIVAC
1004 Modifications; Error Detection; and Program Timing.

UP-3881.2   Data Line Terminal Type 1,   P.I.E. 2   December 9, 1963
       Updating Package "A" (31 pp.)

Updating Package "A" revises the Table of Contents and pages 15 through 18
to add paragraphs to the subject "Terminating the Request to Transmit."
Additional pages 25 through 46 cover the programming for the data communication
and deal primarily with an example of the Transmitting and Receiving for a
Two Card Message.

UP-3881.16   Data Line Terminal Type 1,   P.I.E. 16   January 29, 1965
       Updating Package "B" (3 pp.)

Updating Package "B" contains revisions to DLT 19 which consist of the
removal of the two paragraphs, "Long Message" and "No End of Message."
Early termination on a transmit step allows step sequence change.

14. UP-3881.18 Rev.1   "Recap" of Current UNIVAC 1004   P.I.E. 18 Rev. 1   November 30, 1966
     (SLI)***   Card Processor released items
       to date. (18 pp.)

15. UP-3896 (SLI)***   Scored Card Feature, 1004 Card   Library Memo 13   February 13, 1964
       Processor (7 pp.)

The Scored Card Feature will find use in applications requiring the punching
of cards containing a vertical score or die cut. By preventing sensing of the
card columns immediately adjacent to the vertical score or die cut, the Scored
Card Feature eliminates the possibility that the sensing brushes will read the
score or die cut and assures proper operation of the Punch Hole Count Check.

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16. UP-3910.5 (SLI)***   Software System Field Report,   General P.I.E. 5   May 11, 1964
UD1-752 attached (12 pp.)

This P.I.E. Bulletin announces a new reporting and handling system for
UNIVAC Software Field Trouble Reports. The attachment is a copy of the
7-part snap-out form, UD1-752, Software System Field Report (SSFR),
which is an integral part of this system.

17. UP-3922 (SLI)***   Paper Tape Reader, 1004 Card   Library Memo 16   April 13, 1964
Processor (24 pp.)**

The Paper Tape Reader provides the UNIVAC 1004 series with the capability
for direct input from 5, 6, 7, or 8 track punched paper tape at 400
characters per second in variable blocks, and information read is delivered
directly to core storage. Any type of code may be read, using programmed
translation routines when necessary. One inch, 7/8 inch, and 11/16 inch
tape is accepted by the tape reader. The unit is mounted directly on the
UNIVAC 1004 Card Reader.

    UP-3881.8   Paper Tape Reader, 1004 Card   P.I.E. 8   May 8, 1964
Processor, Updating Package
"A" (8 pp.)

Updating Package "A" contains a revision which is being made primarily to
include a "Tape Standard's" section on PTR page 18. This new section gives
the information of the proper tape to be used and the correct tape splicing
method.

18. UP-3923 (SLI)***   Auxiliary Card Reader, 1004   Library Memo 15   April 1, 1964
Card Processor (24 pp.)

The Auxiliary Card Reader for the UNIVAC 1004 Card Processor provides an
additional source of input to that obtained from the card reader incorporated
in the Processor. The Auxiliary Card Reader can be used as the sole source
of punched-card input, or more significantly, can be used concurrently with
the Processor Card Reader or Read-Punch Unit or both to obtain a wide variety
and capacity of card input during one run. This manual contains revised Card
Reading Timing Charts which differ from those in the basic UNIVAC 1004
Reference Manual (UT 2441 Rev.1 - 90-column and UT 2543 Rev.1 - 80-column).

19. UP-3926 (SLI)***   Data Line Terminal Type 2   Library Memo 17   May 1, 1964
1004 Card Processor (47 pp.)**

The Type 2 Data Line Terminal operating through telephone facilities with a
Digitronics D520 Magnetic Tape Terminal makes the UNIVAC 1004 compatible
with virtually all computing systems available today. As a result, the
UNIVAC 1004 DLT/Digitronics D520 combination provides a communications
interface capable of accommodating the data communication requirements of
diverse computing systems.

    UP-3881.10   Data Line Terminal Type 2,   P.I.E. 10   July 10, 1964
1004 Card Processor, Updating
Package "A" (15 pp.)

Updating Package "A" contains numerous revisions. Although they are minor
revisions, they add considerably to the operation of the Type 2 Data Line
Terminal.

    UP-3881.15   Data Line Terminal Type 2,   P.I.E. 15   January 29, 1965
1004 Card Processor, Updating
Package "B" (17 pp.)

Updating Package "B" contains revisions which were necessitated by the
added ability of the Type 2 Data Line Terminal to check for either odd or
even Character Parity through the use of Auxiliary 4 hub.

UP-3881.18 Rev.1

20. UP-3927 Rev.2 (SLI)*** 1004 III System General Description, 1004 Systems (23 pp.)   Library Memo 39   July 26, 1965

This revision describes the physical characteristics of each of the units in the minimum configuration of the UNIVAC 1004 III System. In addition, the characteristics of each of the units which may be attached to the system as optional peripheral equipment are also described.

21. UP-3931 (SLI)***   Processor Forms Stacker, 1004 Card Processor (4 pp.)   Library Memo 19   May 19, 1964

The Processor Forms Stacker, an optional device for the UNIVAC 1004 Card Processor, is designed to assist in the proper stacking of printed continuous forms as they are fed from the Processor to the Receiving Platform.

22. UP-3935 (SLI)***   Paper Tape Punch, 1004 Card Processor (27 pp.)   Library Memo 21   July 8, 1964

The Paper Tape Punch provides the UNIVAC 1004 with the ability to use paper tape as a direct output media. Under complete control of the Processor, it will perforate any form of 5-, 6-, 7-, or 8- track tape code and provide odd-parity hole perforating if desired. The tape blocks length can be fixed or they can be variable.

23. UP-3938 (SLI)***   1004 III Magnetic Tape Unit, 1004 Systems (44 pp.)**   Library Memo 20   June 29, 1964

This manual is a detailed description of the UNIVAC 1004 Magnetic Tape Unit. It includes Introduction, Physical, Tape, and Checking Characteristics, Connection Panel Functions, and Tape Timing.

UP-3881.14   1004 III Magnetic Tape Unit, 1004 Systems, Updating Package "B" (3 pp.)   P.I.E. 14   December 29, 1964

Updating Package "B" contains revisions to Section 6 which include two possible actions which should intervene following the impulsing of transport selection and before attempting to select another tape transport.

UP-3881.19   1004 III Magnetic Tape Unit, 1004 Systems, Updating Package "C" (11 pp.)   P.I.E. 19   May 18, 1965

Updating Package "C" contains revisions to Section 5. Of particular significance in this revision is: the inclusion of the ACI (Address Check Inhibit) Hub and the Processor interlock time change. Updating Package "C" supersedes Updating Package "A." Destroy all copies of 1004 systems P.I.E. 12, UP-3881.12.

24. UP-3942 (SLI)***   Paper Tape Translation, Flexowriter Code to 6-Bit Code, 1004 Card Processor (22 pp.)**   Library Memo 22   July 10, 1964

This bulletin describes a method of translating 8-level Flexowriter paper tape code to 1004 machine code or other 6-level code. Any paper tape code that can be read into one six-bit memory location can use a variation of this routine. Using this method, the programmer can both translate and partially edit the input data during paper tape Read time.

UP-3881.13   Paper Tape Translation, Flexowriter Code to 6-Bit Code, 1004 Card Processor, Updating Package "B" (10 pp.)   P.I.E. 13   December 3, 1964

Updating Package "B" contains revisions to correct an inconsistency and to add an improved control for recognizing "End of Block" character. This bulletin supersedes Updating Package "A" for UP-3942 released on UP-3881.11. Destroy all copies of UP-3881.11.

UP-3881.18 Rev.1

U Number	Title	UNIVAC 1004 Releasing Document	Date of Release

25. UP-3943 (SLI)***   Paper Tape Translation, Five   Library Memo 26   November 6, 1964
Track to 6-Bit Code, 1004 Card
Processor (21 pp.)
This manual describes a new method of translating 5-level paper tape code
to 1004 machine code or other 6-level code. Any paper tape code that can
be read into one six-bit memory location can use a variation of the method.

26. UP-3944 (SLI)***   Paper Tape Translation,   Library Memo 27   November 30, 1964
A.S.C.I.I. 8 Track to 6-Bit
Code, 1004 Card Processor (21 pp.)**
UP-3944 describes a new method of translating the 8-level American Standard
Code for Information Interchange (A.S.C.I.I.) to 1004 machine code or other
6-level code. The input medium is punched paper tape.

    UP-3881.20   Paper Tape Translation,   P.I.E. 20   May 21, 1965
A.S.C.I.I. 8 Track to 6-Bit
Code, 1004 Card Processor,
Updating Package "A" (6 pp.)
The changes included in Updating Package "A" allow the example shown in the
manual to handle special characters as well as alphanumeric.

27. UP-3945 (SLI)***   Read/Punch Unit, 1004 Card   Library Memo 29   October 1, 1964
Processor (31 pp.)
The Read/Punch used with the UNIVAC 1004 Card Processor greatly expands both
the input and the output capabilities of the processor. The basic characteristics
are: Speed; Programmed Operations; Simultaneity; Checking; and Program
Compatibility. The Read/Punch is available in 80-column and 90-column models.
UP-3945 contains reformatted and corrected information from UP-3881.1.
All copies of UP-3881.1 are to be destroyed.

28. UP-3946 (SLI)***   Translate Process, 1004 Card   Library Memo 23   August 9, 1964
Processor (15 pp.)
This manual describes the Translate Process which is available as an optional
feature of UNIVAC 1004 I, II, or III. The Translate Process permits translation
of an entire unit record or tape block and will operate with a 90-column or an
80-column (XS-3) Processor or with an 80-column Processor equipped with the
Code Image feature.

29. UP-3948 Rev.1 (SLI)*** Introduction to Magnetic Tape,   Library Memo 40   July 14, 1965
1004 Systems, (14 pp.)
This revision is intended to introduce some standard terminology and basic
concepts of magnetic tape to programmers familiar with punch cards. Where
possible, the information about tape is related or compared to punched-card
concepts to take advantage of prior knowledge. UP-3948 Rev.1 replaces
UP-3948. All copies of UP-3948 and Library Memo 25 are to be destroyed.

30. UP-3949 Rev.1 (SLI)*** 1004 II & III Card Processors   Library Memo 34   June 24, 1965
Timing, 1004 Card Processor (12 pp.)
This manual describes the increased speeds of card reading, storage access,
and printing which have been incorporated into the design of the UNIVAC
1004 II and the UNIVAC 1004 III Systems. Timing charts are provided which
give for 90-column, 80-column, or Code Image Cards the feeding rate or
process time, depending on the number of card frames read. UP-3949 Rev.1
supersedes UP-3949. Destroy all copies of UP-3949 and Library Memo 24.

31. UP-3957 (SLI)***   Continuous Form Specifications,   Library Memo 32   November 20, 1964
1004 Card Processor (13 pp.)
UP-3957 is designed to outline the basic specifications for the forms to be
used with the printer of the UNIVAC 1004 Card Processor. It is intended to
act as a guide when planning these forms.

32. UP-3967 (SLI)*** Magnetic Tape Unit Uniservo C, Operating Instructions, 1004 Systems (28 pp.)** — Library Memo 31 — November 25, 1964

Manual UP-3967 contains the following information: Introduction; Basic features and controls of the Magnetic Tape Unit; Tape Transport; Explanation of Power Application for the Magnetic Tape Unit, the contents and usage of the Control Panel, and Operating Procedures; and Cleaning Instructions.

UP-3881.17 Magnetic Tape Unit Uniservo C, Operating Instructions, 1004 Systems, Updating Package "A" (3 pp.) — P.I.E. 17 — January 29, 1965

Updating Package "A" concerns the paragraph "BOT." The BOT (Beginning of Tape) indicator on the Control Panel signals a Ready condition if that condition exists when the tape is at its Load Point Mark.

33. UP-3971 (SLI)*** Magnetic Tape Unit, Uniservo A, Reference Manual, 1004 Systems (33 pp.) — Library Memo 33 — January 8, 1965

This manual contains the following information: Introduction; Physical Characteristics; Tape Characteristics; Checking Characteristics; Connection Panel Functions and Hub Assignments; and Tape Timing.

34. UP-3998 (SLI)*** Punch and Read-Punch Switch, 1004 Systems (5 pp.) — Library Memo 35 — January 29, 1965

This manual is designed for use with the UNIVAC 1004 -07 (I, II, or III) Card Processor so that the card punching connection for 90- and 80-column operation can be changed merely by the throwing of a switch on the Processor.

35. UP-4001 (SLI)*** Alternate Print Code, Reference Manual, 1004 Systems (9 pp.)** — Library Memo 37 — February 19, 1965

The optional Alternate Print Code feature is designed primarily for application to a 90- or 80-column UNIVAC 1004 I, II, or III Card Processor so that a second 6 track (bit) code, an "Alternate Print Code," in addition to the basic 90-column or XS-3, can be read out of Print Storage for printing. This new feature provides a very ready means of obtaining a printed listing of data entered into the UNIVAC 1004 in a "foreign" code.

UP-3881.21 Alternate Print Code, Reference Manual, 1004 Systems, Updating Package "A" (5 pp.) — P.I.E. 21 — June 15, 1965

Updating Package "A" makes changes to the switching time to change from one print code channel to the other on page 2, and a code change in the example (page 4) as well as the explanation of this example on page 5.

36. UP-4007 (SLI)*** Auxiliary Core Storage, 1004 Systems (42 pp.) — Library Memo 38 — March 25, 1965

Auxiliary Core Storage, an optional feature for the UNIVAC 1004 (I, II, III) Card Processor, doubles the Core Storage capacity to 1922 program addressable character locations through the addition of a second Core Storage unit of 961 locations. In addition to the increased storage capacity gained by including the Auxiliary Core Storage in the UNIVAC 1004 Card Processor, the various switching and control abilities governing the operation of the two storages add considerably to the utility, versatility, and flexibility of the UNIVAC 1004.

37. UP-4026 Rev.1 1001 Card Controller - 1004 Interface Reference Manual (30 pp.) — 1001 Library Memo 3 — October 19, 1966

This manual contains revisions and the expansion of material concerning the UNIVAC 1001 Card Controller and the UNIVAC 1004 Interface. The UNIVAC 1004 Interface is the means of interconnecting a UNIVAC 1004 Processor (I, II, or III) and a UNIVAC 1001 Card Controller for the direct exchange of data between the Core Storages of the two units. Because of this close interrelation, copies are being provided to all 1004 library holders. UP-4026 Rev.1 supersedes UP-4026 released in April, 1965. Destroy all copies of UP-4026.

UP-3881.18 Rev.1

38. UP-4033   (SLI)***   Card Reader Motor Switch, 1004   Library Memo 41   June 18, 1965
                         Systems (6 pp.)

The use of the Card Reader Motor Switch will reduce mechanical wear in the
Processor and tend toward a more quiet operation. This switch is an optional
feature for the UNIVAC 1004 Processor. Its purpose is to turn off the motor
to the Processor Card Reader when the application does not require the feeding
of cards by the Processor.

39. UP-4044   (SLI)***   Magnetic Tape Unit Uniservo   Library Memo 42   September 27, 1965
                         VI C Operating Instructions,
                         1004 Systems (29 pp.)

UP-4044 is the operating instructions for the Uniservo VI C used in a UNIVAC
1004 System. In addition to describing the various operating elements of this
Uniservo, this manual describes in detail the operating procedures for mounting,
threading, and handling the magnetic tapes used in the system. Also included
is the recommended, periodic procedures for cleaning the Uniservo to help
assure accurate results.

40. UP-4045   (SLI)***   Magnetic Tape Unit Uniservo   Library Memo 42   September 27, 1965
                         VI C Reference Manual, 1004
                         Systems (37 pp.)

This reference manual outlines the specifications of Uniservo VI C. The
characteristics of the unit, the tape, and automatic checking features are
given. Also included are the various connection panel functions and hub
assignments with a detailed description of the various tape operations.
The last section of the manual has the tape timing for each operation.

41. UP-4093   (SLI)***   Introduction to Random   1004/1005   May 5, 1966
                         Processing, 1004/1005 Systems   Library Memo 1
                         (24 pp.)

This manual is intended to acquaint the reader with the fundamental concepts
of random access processing. It includes discussions of both the basic
principles involved in the use of random access and design of the equipment.
Although the principles discussed apply generally to all random access systems,
UNIDISC is used as a model for study. UNIDISC is a modular random access
system that is available with a minimum storage capacity of 1,008,000
alphanumeric characters. The system can be expanded to a maximum capacity
of 6,048,000 characters in increments of 1,008,000.

Notification of discontinued, replaced, and updated items are carried regularly via
Library Memos and P.I.E. Bulletins. For summary of these destruction notices, see
page 16 of this bulletin. This summary contains all destruction notices issued since
former version of this Bulletin, UP-3881.18, dated April 30, 1965.

** For audit purposes, disregard the A,B, or C designation immediately following the base number 3525 and/or following the point designation of the Tip. These simply designate various printings--not revision.

U Number	Title

80-COLUMN LIBRARY ITEMS

** 1. U-3525A.13B (SLI)*** Sequence Checking Alphabetical-Numerical Designations - 80-Column, 1004 Card Processor (3 pp.)
Cards with a designating field containing both numerical and alphabetical characters can be compared for sequence (greater, less, or equal). This is made possible by the logical design of the UNIVAC XS-3 Code. The type of designating field to which this Tip applies primarily is one in which one or more of the columns can contain either an alphabetical or a numerical character in individual cards. For example, it is common practice to include either an alphabetical prefix or suffix in a part number.

90-COLUMN LIBRARY ITEMS

1. U-3525A.3B (SLI)*** Delete Zero Balance, 90-Column, 1004 Card Processor (4 pp.)
Through the use of a simple programming technique, the DØB (Delete Zero Balance) Transfer can be used with 90-Column applications. As pointed out in the Reference Manual, this feature was designed basically for 80-Column application.

80/90-COLUMN LIBRARY ITEMS

1. U-3525.1C (SLI)*** Simultaneous Multiplication with Product Rounding - 80/90-Column, 1004 Card Processor (4 pp.)
The practically unrestricted word length of the UNIVAC 1004 permits the simultaneous multiplication of two or more multiplicands by one multiplier to arrive at the individual products. A simple means of rounding a product or products is also shown.

2. U-3525A.4B (SLI)*** Missing Number Control - 80/90-Column, 1004 Card Processor (6 pp.)
Returnable documents bearing a serial number, such as checks, usually require a reconciliation to determine those that have been returned and those that have not. By means of a Comparator and a Selector, this reconciliation becomes a very simple procedure with the UNIVAC 1004. The serial number read from a card is compared with a control serial number maintained automatically by the processor.

3. U-3525.5B (SLI)*** Single-Card Total Elimination - 80/90-Column, 1004 Card Processor (10 pp.)
On a List-Total run combining single- and multiple-card Total groups, the printing of one-card Totals can be eliminated. NOTE:- This procedure can also include or be used for the elimination of the summary punching on one-card Totals.

4. U-3525A.6B (SLI)*** Re-Using Multiply - Divide Routine - 80/90-Column, 1004 Card Processor (7 pp.)
In many problems, it is often necessary to reuse the Multiply or Divide Subroutine. Since the out of the subroutine will not always be to the same place in the program, some method must be established to identify the return point to the main program. Two methods are presented here as possible solutions to the problem.

5. U-3525A.7B (SLI)*** Random Accumulation - 80/90-Column, 1004 Card Processor (13 pp.)
The problem of accumulating amounts or quantities of many types or classes as defined by a 1 or 2 digit type or class code is one of frequent occurrence in many data processing applications. This Tip describes methods of accomplishing such accumulations when the input cards are in random sequence or are arranged in sequence by some other classification. The random accumulation technique can eliminate sorting, and--more important--can also eliminate separate processing runs by permitting such accumulations to be performed during the preparation of other reports or records.

***(SLI) Standard Library Item -- Abbreviation indicating item automatically included when customer or internal name is placed on S.P.L.S. mailing lists and a "Library is provided."

6. U-3525.8A Rev.1 (SLI)*** Check Digit Verification - 80/90-Column,
                             1004 Card Processor (7 pp.)
   The verification of a card field containing a numerical code (usually a
   designating field) can be accomplished automatically by appending an
   additional digit, "Check Digit," to the basic code. The Check Digit is
   usually added immediately to the right of the basic code to become a part
   of the designating field.

7. U-3525A.9B (SLI)***   Division, Method 2 - 80/90-Column,
                             1004 Card Processor (6 pp.)
   The method of division presented here (Method 2) is an alternative to that
   outlined in the UNIVAC 1004 Card Processor Reference Manual (Method 1).
   Method 2 has the following points in its favor: It requires only five
   program steps; there are no limiting factors as to the size of either the
   divisor or of the dividend; the wiring is simple; and the method is easily
   understood.

8. U-3525A.10B (SLI)***   Sequentially Packed Summarizing - 80/90-Column,
                             1004 Card Processor (6 pp.)
   In many applications, the number of card columns to be summary punched for
   each classification falls far short of the full card column capacity.
   Witness such applications as the summarizing of quantity and amount by
   catalogue number or today and to-date sales by department. Instead of
   each summary card containing the summarized information for but one
   classification, a multiple number of classifications can be "packed" into
   one summary card. This can result in at least two immediate and highly
   practical benefits; a substantial monitary saving in the number of cards used,
   considerable time saving in the over-all processing both prior to and
   during the 1004 operation.

9. U-3525A.11B (SLI)***   Cross-Footing, Fields with Like Sign - 80/90-Column,
                             1004 Card Processor (3 pp.)
   Where a multiple number of fields of like sign are to be added together to
   form one total (cross-footed), this addition can be performed in one Program
   Step by the UNIVAC 1004. The number of fields that can be cross-footed in
   one step by the method outlined here is limited only by the number of
   adjacent locations in storage available at the time the operation is to
   be performed. The fact that this practically unlimited cross-footing can
   be performed in one step is made possible by two features of the 1004; the
   two-address logic and the serial adder.

10. U-3525A.12B (SLI)***   Cross-Footing, Fields with Unlike Signs - 80/90-Column,
                             1004 Card Processor (3 pp.)
    Where a multiple number of fields of unlike sign are either to be added or
    subtracted in succession from one field, the individual operations can be
    performed quite simply and quickly with one editing step and a loop or
    iteration of two steps.

11. U-3525A.14B (SLI)***   Step Definition through Comparator Results - 80/90-Column,
                             1004 Card Processor (2 pp.)
    Comparisons are frequently used to vary a program. One method is to use the
    Comparator results to turn Program Selects on or off. The program modifications
    are then obtained by the Selectors so controlled. Program variation can
    also be obtained by a more direct use of the Comparator results.

12. U-3525A.15B (SLI)***   Double Transfer - 80/90-Column,
                             1004 Card Processor (3 pp.)
    By the immediate repetition of the same transfer step, the contents of one
    storage area (Operand 1) can be transferred to two different (Operand 2)
    storage areas; to one OP2 area on the first use of the step, to the other
    OP2 area on its second use.

U Number		Title

22. U-3525A.25B (SLI)***   Sine-Cosine Routine - 80/90-Column,
                1004 Card Processor (11 pp.)
This Sine-Cosine routine uses the Chebyshev polynomials to approximate the sine
function. The important considerations when forming the approximating function
are that the functions be short and economical of machine time. It must also
have an error not greater than the last decimal position.

23. U-3525.26A (SLI)***   Accumulating Fractions - 80/90-Column,
                1004 Card Processor (2 pp.)
Through the use of the Arithmetic Overflow feature of the UNIVAC 1004 and a
constant consisting of the tens complement of the fraction denominator, the
accumulation of fractions can be accomplished in two Program Steps. No
conversion is necessary.

24. U-3525.27A (SLI)***   Inserting Constants while Clearing Storage - 80/90-Column,
                1004 Card Processor (2 pp.)
During a Clear Storage step, the insertion of constants can be performed quite
simply and selectively. This operation is possible because of the ability of
the UNIVAC 1004 to accept and perform an Insert operation in one character time.

25. U-3525A.28 (SLI)***   Conserving Distributors in Address Wiring - 80/90-Column,
                1004 Card Processor (3 pp.)
Where the storage format is or can be arranged so that a multiple number of fields
include the same MSL and LSL Column addresses, a very considerable saving in
the number of Distributors required for addressing can result by the use of a
unique variation from the standard address technique. The fields to be included
in the address wiring suggested here would be aligned vertically in storage with
all fields in each such vertical alignment bearing the same MSL and LSL Column
addresses.

26. U-3525.29A (SLI)***   Concurrent Processing - 80/90-Column,
                1004 Card Processor (5 pp.)
Using the Card Reader as input for one file and the Read-Punch Unit as input for
a second file, it is possible for the UNIVAC 1004 to process two unrelated jobs
concurrently. Both routines would be under the control of a single Connection
Panel.

27. U-3525.30A (SLI)***   Duplicating Transfer - 80/90-Column,
                1004 Card Processor (4 pp.)
The data contained in one storage area can be duplicated in two or more storage
areas in one transfer step. This operation is made possible by the two address
logic and potent editing facilities of the UNIVAC 1004. The amount of data that
can be duplicated and the number of duplications of that data is limited only by
the number of adjacent locations in storage available at the time the transfer
operation is performed.

28. U-3525.31A (SLI)***   Numerical Packing - 80/90-Column,
                1004 Card Processor (7 pp.)
Three columns of numerical data stored in XS-3 code can be compacted into two
storage locations. Thus, the same amount of numerical information can be stored
(packed) in one-third less locations.

29. UP-3525.32 (SLI)***   Straight Card Listing and Reproducing with the Confidence Panel -
                80/90-Column, 1004 Card Processor (3 pp.) Released by Library Memo 44
The "Confidence" Connection Panel supplied with each UNIVAC 1004 Processor can
be used to perform either of these two operations: Straight card listing only or
straight card listing and reproducing.

E. DESTRUCTION NOTICE

U Number	Title	Replaced By	Date of Replacement
U-3525A.2C	Multiple-Level Total Control - 80/90-Column, 1004 Card Processor (8 pp.)	U-3525A.22 Multiple-Level Total Control - 80/90-Column, 1004 Card Processor (7 pp.)	
U-3525A.17A	Floating $ Sign - 80/90-Column, 1004 Card Processor (2 pp.)	UP-3525.17 Rev. 1 Floating $ Sign - 80/90-Column, 1004 Card Processor (2 pp.)	
UP-3881.12	1004 III Magnetic Tape Unit, 1004 Systems, Updating Package "A" released September 30, 1964 on P.I.E. 12	P.I.E. 19 1004 III Magnetic Tape Unit, 1004 Systems, Updating Package "C"	May 18, 1965
UP-3881.18	P.I.E. Bulletin, UP-3881.18, released April 30, 1965	P.I.E. Bulletin, UP-3881.18 Rev. 1 (This Bulletin)	November 30, 1966
UP-3927 Rev.1	1004 III Systems General Description, 1004 Systems, released January 29, 1965 on Offset Release, Internal Distribution	Library Memo 39 1004 III Systems General Description, UP-3927 Rev.2	July 26, 1965
UP-3948	Introduction to Magnetic Tape, 1004 Systems, released August 4, 1964 on Library Memo 25	Library Memo 40 Introduction to Magnetic Tape, 1004 Systems, UP-3948 Rev.1	July 14, 1965
UP-3949	1004 II & III Card Processors Timing, released August 19, 1964 on Library Memo 24	Library Memo 34 1004 II & III Card Processors Timing, UP-3949 Rev.1	June 24, 1965
UP-4026	1001 Card Controller - 1004 Interface Reference Manual, released April, 1965 by Marketing Announcement	1001 Library Memo 3 1001 Card Controller - 1004 Interface Reference Manual, UP-4026 Rev.1	October 19, 1966
UP-4455	Preliminary Reference Manual Data Line Terminal, released by J. L. Sturdevant, January 13, 1964	Library Memo 17 Data Line Terminal Type 2, 1004 Card Processor, UP-3926	May 1, 1964

(This concludes DESTRUCTION NOTICE Section.)

UP-3881.18 Rev.1

F. __RECAP OF CURRENT 1004 P.I.E.'s (in numerical order)__

U Number	Title	Date
UP-3881.2	P.I.E. 2	December 9, 1963
UP-3881.4	P.I.E. 4	February 18, 1964
UP-3881.5	P.I.E. 5	February 19, 1964
UP-3881.6	P.I.E. 6	February 28, 1964
UP-3881.8	P.I.E. 8	May 8, 1964
UP-3881.9	P.I.E. 9	July 2, 1964
UP-3881.10	P.I.E. 10	July 10, 1964
UP-3881.13	P.I.E. 13	December 3, 1964
UP-3881.14	P.I.E. 14	December 29, 1964
UP-3881.15	P.I.E. 15	January 29, 1965
UP-3881.16	P.I.E. 16	January 29, 1965
UP-3881.17	P.I.E. 17	January 29, 1965
UP-3881.18 Rev.1	P.I.E. 18	November 30, 1966
UP-3881.19	P.I.E. 19	May 18, 1965
UP-3881.20	P.I.E. 20	May 21, 1965
UP-3881.21	P.I.E. 21	June 15, 1965

G. __CURRENT PROGRAM FORMS AND PERTINENT STATIONERY STOCK ITEMS__

Form No.	Description	Former Number
UD1-563	Program Record Folder (Run Book Cover)	None
UD1-631	Storage Chart, 50 sheets per pad, $8\frac{1}{2}$" x 11"	UP-3315.7 Rev.1
UD1-632	Selector Usage Chart, 50 sheets per pad, $8\frac{1}{2}$" x 11"	U -3315.6 Rev.1
UD1-634	Address Combine Usage Chart, 50 sheets per pad, 11" x 16"	I· -3315.4 Rev.1
UD1-635	Printer Storage & Format Chart, 50 sheets per pad, 11" x 16"	UP-3315.8 Rev.1
UD1-636	Step Sequence Trace Chart, 50 sheets per pad, $8\frac{1}{2}$" x 11"	UP-3315.11
UD1-637	Input/Output Chart, 50 sheets per pad, 11" x 16 3/4"	U -3315.10 Rev.1
UD1-638	Instruction Chart, 50 sheets per pad, $8\frac{1}{2}$" x 11"	U -3315.1 Rev.1
UD1-639	Operating Setup Chart, 25 charts to a set, $8\frac{1}{2}$" x 11"	UP-3883
UD1-723 Rev.1-66 (SLI)***	Plastic Template and Instructions Set	UP-3399 Rev.1
UD1-752 (SLI)***	Software System Field Report (SSFR), 7-part snap-out form attached to UP-3910.5, Software System Field Report released on General P.I.E. 5	None
UD1-787	Printout and Listing Folder, $11\frac{1}{2}$" x $15\frac{1}{2}$" - 6" capacity	UP-3889
UD1-876	80-column Coding Card	UP-3866

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Form No.	Description	Former Number
UD1-960	90-column Coding Card	UP-3867
UD1-1108	High Speed Printer Format Sheet, 11" x 16½"	UP-3842
UP-2544 Rev.3	1004 Connection Panel Diagram, 11" x 16" 50 sheets per pad	None
UP-3315.3 Rev.3	Function Chart, 50 sheets per pad, 8½" x 11"	None
UP-3315.12	Standard Program Format Sheets, 90-column, with Summary Punching, 50 sheets per pad, 11" x 17"	None
UP-3861	General Keypunch Form, 50 sheets per pad, 11" x 16"	None
UP-3956	1004 Connection Panel Coordinates, Plugboard Decals Rear and Front, 2 sheets	None
UP-3963 (SLI)***	90-column Wiring Templates	None

Complete up-to-date UNIVAC 1004 software and hardware libraries should contain the items SLI listed above. Copies of all materials noted, except Stationery Items, are stocked in Holyoke, Massachusetts, for requisitioning purposes. For copies of the current P.I.E.'s, requisition by "U" number and title through your local UNIVAC Manager. Stationery Items (those with "UD1" identification numbers) should be ordered from Stationery Stock in accordance with standard ordering procedures. All stock of manuals themselves are immediately updated upon release of an Addenda or Updating Package. Thus, a manual is complete as of the time of its requisition.

All internal and external names of S.P.L.S. UNIVAC 1004 Mailing Lists will receive copies of this Programming Information Exchange Bulletin, UP-3881.18 Rev. 1. Periodically this bulletin will be revised to update the current list of UNIVAC 1004 Systems items. Additional copies of this bulletin may be ordered via Sales Help Requisition, from Holyoke, Massachusetts, through your local UNIVAC Manager.

MANAGER
Systems Programming Library Services

TO LISTS: 10U, 211, 630, 650, 692, 153, and S.P.L.S. Lists 28 and 29.