File No. 1401/1460-00
GA24-1495-6

IBM Systems Reference Library

IBM 1401 and 1460 Bibliography

This bibliography lists available reference literature applicable to the installation and operation of the IBM 1401 and 1460 Data Processing Systems, as well as other publications of general interest to the system user. Information about this literature is current as of January 1, 1970.

Major sections of the bibliography are:

Part 1 – a listing of publications by subject;
Part 2 – a listing by machine type number; and
Part 3 – a listing by publication form number.

Part 1 identifies the current revision level of each publication and includes the form numbers of applicable Technical Newsletters. *Part 3* contains a brief description of each publication.

Systems Reference Library

The Systems Reference Library (SRL) is issued for each major IBM data processing system. The SRL contains reference literature needed to plan, program, install, and operate the system. In addition, the *Bibliography of Data Processing Techniques*, GF20-8172, lists selected IBM technique-oriented publications that are applicable to many systems.

Bibliography

The bibliography lists applicable publications and related materials by subject, machine type number, and order number, and describes each publication briefly. This bibliography can be useful in selecting items of interest to your installation and in keeping abreast of other items that may be useful in the future.

File Numbers of Publications

The first page of each SRL publication shows the title, order number, and file number. The file number is in two parts: the first identifies the system or component discussed (usually by machine or system number); the second gives the code number of the subject matter of the publication.

For publications associated with one or two libraries, the first part of the file number is the system type (e.g., 1401/1460-). When the publication is included in more than two libraries, the component type number (e.g., 1311-, 1403-) is used, if applicable. In other cases, GENL-(General) is used.

The second part of the file number is the subject code, which designates the subject category; this code may be useful in designating a filing sequence. Code 15, for example, appears on publications relating to physical planning specifications, code 33 on publications relating to IBM sort and merge programs for the system, and subject code 80 on installation supplies, such as coding forms and physical planning templates.

Other publications of interest to a system user are listed under code 85 (Reference Cards), 90 (Education Literature), and 99 (Supplementary Literature).

In the bibliography, subject codes appear in the subject listing (*Part 1*) and in the upper right corner of each publication description (*Part 3*).

Technical Newsletters

Additions and other modifications to SRL publications are distributed as Technical Newsletters (TNL's). The file number and order number of the publication to which the TNL applies, as well as previously issued TNL's, are identified on the TNL title page. These TNL's are incorporated into base publications as such publications are reprinted.

IBM Programming Systems

Information about IBM programming systems available, including ordering information, is found in the *Catalog of Programs* for the system under subject code 20.

Seventh Edition (January, 1970)

This is a major revision of, and obsoletes, GA24-1495-5 and SRL Newsletter GN20-1401.47.
Significant changes and additions have been made throughout.

Requests for copies of this and other IBM publications should be made to your IBM representative or to the IBM branch office serving your locality.

This manual has been prepared by the IBM Systems Development Division, Product Publications, Dept. 171, P.O. Box 6, Endicott, N.Y. 13760. Address comments concerning the contents of this publication to this address.

This section of *Part 1* lists current IBM 1401 and 1460 marketing publications and associated technical newsletters by subject code. To assist in filing, SRL publications have the subject code on the front cover as part of the file number. Most 1401 machine and programming publications are also applicable to the 1460.

Subject Code		*Order Number*	*Technical Newsletter*
00	***General Information***		
	1401 and 1460 Bibliography	GA24-1495-6	
	1401 System Summary	GA24-1401-1	GN24-0439
		GA24-1401-2	
	1401G System Summary	GA24-3165-1	
	1401H System Summary	GA24-3476-0	
	1460 System Summary	GA24-1496-1	GN24-0441
	1401 Configurator	GA24-1491-2	
	1401 Model H Configurator	GA24-3494-0	
	Machine System		
01	**Basic Reference Material**		
	System Operation Reference Manual IBM 1401 and 1460	GA24-3067-2	
	Miscellaneous Input/Output Instructions IBM 1401 and 1460	GA24-3068-0	GN24-0195
		GA24-3068-1	GN24-0363
		GA24-3068-2	GN24-0393
		GA24-3068-3	
	Tape Input/Output Instructions	GA24-3069-0	GN24-0137
		GA24-3069-1	
		GA24-3069-2	
	Disk Storage Input/Output Instructions	GA24-3070-1	
		GA24-3070-2	
	1401 Data Processing System Operator's Guide	GA24-3144-2	
	1401 and 1460 Instruction and Timing Summary	GA24-6447-1	GN24-0284
		GA24-6447-2	
	1401 Data Flow	GG24-1447-0	
	Standard BCD Interchange Code	GJ22-6690-2	
03	**Input/Output**		
	1011 Paper Tape Reader	GA26-5754-0	GN26-0069
	1012 Tape Punch	GA26-5776-0	GN26-0059
			GN26-0074
		GA26-5776-1	
	1219 Reader Sorter, 1419 Magnetic Character Reader	GA24-1499-5	
	1219 Reader Sorter Model 32, 1419 Magnetic Character Reader Model 32 (World Trade Only)	GA19-0004-0	
	1231 and 1232 Optical Mark Page Readers	GA21-9012-6	GN21-0094
	1285 Optical Reader	GA24-3256-3	

Subject Code		*Order Number*	*Technical Newsletter*
	1402 Card Read-Punch	GA24-3072-2	GN21-0098
	1403 Printer	GA24-3073-6	
	1403 Printer Model 3 Preferred Character Set Feature	GA24-3205-1	
	Form Design Considerations – System Printers	GA24-3488-2	GN24-0446
	1404 Printer	GA24-1446-1	
	1412 Magnetic Character Reader Model 1	GA24-1421-1	GN24-0253
		GA24-1421-2	GN24-0316
			GN24-0354
		GA24-1421-3	
	1418 Optical Character Reader, 1428 Alphameric Optical Reader	GA24-1473-0	GN24-0261
		GA24-1473-1	GN24-0312
		GA24-1473-2	GN24-0383
			GN24-0413
	Print Quality Considerations 1418 and 1428	GA24-1452-1	GN24-0310
		GA24-1452-2	
	1443 Printer Models 1 to 4, and N1; 1445 Printer Models 1 and N1	GA24-3120-7	
	1447 Console	GA24-3031-3	GN24-0305
		GA24-3031-4	
	High-Speed Reader Sorter Operations Manual	GC20-1607-0	
		GC20-1607-1	
05	**Magnetic Tape Units and Controls**		
	729, 7330, and 727 Magnetic Tape Units Principles of Operation	GA22-6589-2	GN22-0120
	7340 Hypertape Drive Model 2	GA24-1470-0	
07	**Direct Access Storage Units and Controls**		
	1301 Disk Storage Models 11, 12, 21, and 22	GA24-3157-0	
	1301 and 1302 Disk Storage Sequential Data Organization	GA22-6784-0	
	1311 Disk Storage Drive	GA26-5991-0	
	1405 Disk Storage	GA24-3085-0	
	IBM Disk Pack Handling and Operating Procedures	GA26-5756-6	
09	**Teleprocessing Equipment**		
	7740 Communication Control System Systems Summary	GA22-6752-1	
	7740 Communication Control System Principles of Operation	GA22-6753-2	GN22-0193
	1009 Data Transmission Unit	GA24-1039-2	
	1448 Transmission Control Unit	GA24-3010-3	
	Message Rates for IBM 1448 Transmission Control Unit	GA24-3030-1	
	7740 Audio Response Unit Models 1 and 2	GA27-2705-0	
13	**Special and Custom Features**		
	1232 and 534 Custom Features Descriptions	GA21-9065-1	
	Batch Numbering Feature for 1241 and 1419 Magnetic Ink Character Recognition Readers	GA24-3342-0	
	Special Features of IBM 1401 and 1460 Data Processing Systems	GA24-3071-2	
	Modified Character Sets for IBM 1403 Print Chains	GL24-3102-2	

Subject Code		Order Number	Technical Newsletter
	Custom Features for IBM 1401, 1440, and 1460 Data Processing Systems	GA24-3315-0	
	Mark Read Station (Slanted Mark) for 1418 and 1428	GA24-3081-2 GA24-3081-3	
	Endorser Special Features for IBM Magnetic Character Readers	GA24-3036-3	
15	**Physical Planning Specifications**		
	1401 Installation Manual – Physical Planning	GC24-1404-7	GN24-0306 GN24-0357
		GC24-1404-8	GN24-0377 GN24-0407
		GC24-1404-9	
	1448 and 1026 Transmission Control Units	GA24-3233-1	GN27-3007
	1460 Installation Manual – Physical Planning	GA24-1493-2	GN24-0358 GN24-0378 GN24-0382
	7340 Hypertape Drive Model 2 for 1401/1410/1460 Systems–Physical Planning Specifications	GC22-6674-0	GN22-0103
19	**Original Equipment Manufacturers' Information**		
	729 II, IV, V, and VI Magnetic Tape Units	GA22-6643-3	
	1009 Data Transmission Unit	GA24-1065-1	
	1231 Optical Mark Page Reader	GA21-9020-0	
	1311 Disk Storage Drive	GA26-5713-1 GA26-5713-2	GN26-0115
	1401 Processing Unit	GA24-1424-1	
	1402 Card Read-Punch	GA31-1400-2	GN21-0020
	1403 Printer	GA24-1431-3	
	1404 Printer Model 2	GA24-3356-0	
	1447 Console Model 3	GA24-3169-0	GN24-0115
	1448 Transmission Control Unit	GA24-3192-0	GN24-0021
	1460 Processing Unit	GA24-3199-0	GN24-0227
	7330 Magnetic Tape Unit	GA22-6619-3	
	7701/7702/7710/7711 Communication Units	GA22-6818-0	GN22-0821
	7740 Communications Control System	GA22-6802-0	GN22-0265

Programming Systems

20	**General Programming Material**		
	7710 Data Communication Unit Principles of Operation	GA22-6776-0	
	Catalog of Programs for 1240, 1401, 1440, 1450, and 1460 Data Processing Systems	GC20-1601-9	GN20-0013.18
21	**Symbolic Assembly Systems**		
	Symbolic Programming Systems	GC24-1480-0	
22	**Autocoder**		
	Autocoder (on Tape) Language Specifications and Operating Procedures IBM 1401 and 1460	GC24-3319-0	

Subject Code		Order Number	Technical Newsletter
	Autocoder (on Disk) Language Specifications 1401, 1440, and 1460	GC24-3258-2	
	Autocoder (on Disk) Program Specifications and Operating Procedures 1401, 1440, and 1460	GC24-3259-1	GN21-0039 GN24-0270 GN24-5004
		GC24-3259-2	GN21-5004
		GC24-3259-3	
	Basic Autocoder 2K Operating Procedures 1401	GC24-3262-0	GN24-0276
		GC24-3262-1	
	Basic Autocoder 2K Specifications for 1401/1460	GC24-3170-1	
24	**Cobol**		
	Cobol	GF28-8053-1	GN28-0019
		GF28-8053-2	
	Cobol (on Tape) Specifications 1401	GC24-1492-2	
	Cobol (on Disk) Specifications 1401, 1440, and 1460	GC24-3235-2	
	Cobol (on Disk) Operating Procedures 1401, 1440, and 1460	GC24-3242-2	
	Cobol (on Tape) Operating Procedures 1401	GC24-3146-3	
25	**Fortran**		
	Fortran	GF28-8074-2	
		GF28-8074-3	
	Fortran IV Language Specifications, Program Specifications, and Operating Procedures: IBM 1401, 1440, and 1460	GC24-3322-2	GN21-5051
		GC24-3322-3	
	Fortran Specifications and Operating Procedures: IBM 1401	GC24-1455-1	GN21-0046
		GC24-1445-2	
28	**Report Program Generator**		
	2K Report Program Generator Specifications	GC24-3209-0	GN21-0034
	Report Program Generator (on Disk) Specifications 1401, 1440, and 1460	GC24-3261-0	GN24-0251 GN24-0265
		GC24-3261-1	
	Basic 4K Report Program Generator Specifications	GC24-3166-0	GN21-0029 GN24-0277
		GC24-3166-1	
	Basic 4K Operating Procedures 1401 and 1460	GC24-3267-0	
	Report Program Generator (on Disk) Operating Procedures: IBM 1401 and 1460	GC24-3334-0	
	Report Program Generator for 1401 Card and Tape Systems	GJ24-0215-2	
	Fargo	GC24-1464-0	GN24-0039
		GC24-1464-1	
		GC24-1464-2	GN24-0231
		GC24-1464-3	
	Report Program Generator for IBM RAMAC® 1401 Systems: Preliminary Specifications	GJ24-1467-0	
30	**Input/Output Control System**		
	1401-1419 Expanded Codeline Input/Output Control Program (World Trade Only)	GA19-0009-0	

Subject Code		Order Number	Technical Newsletter
	1401 Input/Output Control System (on Tape), Specifications and Operating Procedures	GC24-1462-2 GC24-1462-3	GN24-0268
	Input/Output Control System (on Disk) for 1401-1311: Specifications	GC24-1489-2 GC24-1489-3	GN24-0200
	Direct Data Channel IOCS for 1401, 1440, and 1460: Specifications (Communications IOCS)	GC24-3025-3	
	IOCS Specifications 1460-1448: Specifications (Communications IOCS)	GC24-3047-2	
	Communications IOCS for 1401 and 1460 Operating Procedures (1448/Direct Data Channel)	GC24-3174-1	
	Input/Output Control Program Specifications 1401, 1440, and 1460 with 1285 Optical Reader	GC24-3237-1	GN21-5017
	Communication Input/Output Control System Specifications: IBM 1401, 1440, and 1460 with IBM 1026 and Direct Data Channel	GC24-3241-2	GN21-0057
	Input/Output Control System (on Disk) Operating Procedures 1401 and 1460	GC24-3298-0	
	Communications Input/Output Control Operating Procedures: IBM 1401, 1440, and 1460 with IBM 1026 and Direct Data Channel	GC24-3325-3	
	On-line Testing: IBM 1401, 1440, and 1460	GC24-3341-0	
32	**Utility Programs**		
	Utility Programs for 1401 Equipped with the 7710 Data Communication Unit	GC22-6777-0	
	Disk Utility Programs for 1401-1301/1311: Specifications	GC24-1484-2 GC24-1484-3	GN21-0054 GN21-5001 GN24-0287
	Disk Utility Programs for 1401-1301/1311: Operating Procedures	GC24-3105-2 GC24-3105-3	GN24-0296
	1401 Hypertape Utility Programs Operating Procedures	GC24-3132-0	
	Tape Utility Programs with 120-Character Label Capability for 1401 and 1460: Specifications and Operating Procedures	GC24-3156-1	GN24-0213
	Multiple Tape Utility Program (Incorporating 120-Character Labels) Specifications and Operating Procedures: IBM 1401 and 1460	GC24-3273-0	GN24-0215
	Programs for 1401 Card Systems Specifications	GJ24-0209-2	
	Utility Programs for 1401 Tape Systems: Specifications	GJ24-1411-1 GJ24-1411-2 GJ24-1411-3	GN21-0030
	Multiple Utility Programs for 1401 Tape Systems: Specifications	GJ24-1428-2	
	1401-1009 Utility Program: Preliminary Specifications	GJ24-1463-0	
	1401-1012 Tape Punch Routines	GJ24-1485-0	

Subject Code		*Order Number*	*Technical Newsletter*
33	**Sort-Merge**		
	Sort Programs for 1404/1460-1311: Specifications and Operating Procedures Generative Program: Sort 6; Object Programs: Sorts 61, 62, 63, and 64	GC24-1420-4	GN21-0035
		GC24-1420-5	GN21-5083
	Sort 7 Timing Specifications and Operating Procedures: 1401 and 1460	GC24-1456-1	GN21-5002
			GN24-0291
		GC24-1456-2	
	Comparison of Sort 2—Version 2 Timing for 1401 and 1460	GC24-3038-0	
	Merge 6 Specifications 1401 and 1460	GC24-3053-3	
	Sort 3 for 1401: Preliminary Specifications	GC24-3057-0	GN24-0079
	Sort 3 for 1401: Operating Procedures	GC24-3077-0	
		GC24-3077-1	
	Sort 4 for 1401: Operating Procedures	GC24-3087-0	GN24-0189
	Sort 5 and Sort 6 Timing Program Specifications and Operating Procedures IBM 1401 and 1460	GC24-3176-1	
	Sort 14 — Specifications IBM 1460	GC24-3279-0	GN24-0245
	Sort 14 Operating Procedures	GC24-3289-0	
	Sort 13 and Sort 14 Timing Program Specifications and Operating Procedures IBM 1401 and 1460	GC24-3311-0	
	Sort 7 Specifications and Operating Procedures: IBM 1401 and 1460	GC24-3317-0	GN21-0042
			GN21-5000
			GN24-0279
		GC24-3317-1	
	Merge 7 Specifications and Operating Procedures: IBM 1401 and 1460	GC24-3324-1	
	IBM 1401/1460 Timing Program for IBM System/360 Basic Programming Support Sort/Merge Program (8K Tape)	GC24-3345-1	GN24-0294
			GN24-5019
		GC24-3345-2	GN21-5014
			GN21-5039
		GC24-3345-3	
	1401/1460 Timing Program for IBM Basic Operating System/360 Sort/Merge Program (8k Disk)	GC24-3377-0	
	1401/1460 Timing Program for IBM System/360 Disk and Tape Operating Systems Tape Sort/Merge Program	GC24-3439-1	GN21-5015
			GN24-5065
		GC24-3439-2	
		GC24-3439-3	
	1401/1460 Timing Program for IBM System/360 Operating System Disk Sort/Merge Program	GC24-3445-1	GN24-5125
	1401 Sort 1 Specifications	GJ24-1422-1	GN24-0162
		GJ24-1442-2	
34	**Disk Storage File Organization**		
	Disk File Organization Routines Specifications 1401-1405	GC24-1451-0	
	Disk File Organization Routines for 1401-1311: Operating Procedures	GC24-3128-4	GN21-0056
		GC24-3128-5	

Subject Code		Order Number	Technical Newsletter
	Disk File Organization Routines Specifications 1401, 1440, and 1460 (1311 and 1301)	GC24-3185-1 GC24-3185-2	GN24-0252
37	**Automatic Testing Program**		
	Autotest for 1401 and 1460 with 1311: Specifications and Operating Procedures	GC24-3195-0 GC24-3195-1 GC24-3195-2	GN24-0204 GN24-0272
	Autotest for the 1401: Specifications and Operating Procedures	GF20-0234-1 GF20-0234-2	GN24-0120
48	**Miscellaneous Programs**		
	Programming for 1418 and 1428 Optical Readers	GC24-1091-1	
	Standard Labeling Procedure for the 1311 Disk Storage Drive	GC24-3012-0	
	IBM 1401/1460 or 1440 Operating System Computer Assisted Instruction	GC24-3253-1	
	1401/1440/1460-1026 and 1440-1448 Operating Systems Computer Assisted Instruction Author and Proctor Manual	GC24-3384-1	
	1401/1440/1460-1026 and 1440-1448 Operating System Computer Assisted Instruction Student Manual	GC24-3385-1	
	1401 Peripheral Integrated Processing System for Use with 7000 Series Data Processing Systems	GJ28-0238-0	

80 Installation Supplies

These aids in planning and operating an IBM 1401 or 1460 system do not have subject code (80) printed on the form. These installation supplies are arranged in this section as they relate to the subject code listing in *Part 1.*

Basic Machine Reference Material (01)

1401, 1410, 1440, 1460 Storage Layout	GX24-6438-4 GX24-6438-5	
1401 Console Sheet	GX24-6587-0 GX24-6587-1	
Operating Instruction Sheet – IBM 1401, 1440, and 1460	GX24-6588-1 GX24-6588-2	

Input/Output (03)

Printer Spacing Chart – 6 Lines per Inch	GX20-1776-0	
Printer Spacing Chart – 8 Lines per Inch	GX20-1778-0	
1230, 1231, 1232 Spacing Chart (Test Scoring) 5 Words per Inch	GX20-8040-0	
1230, 1231, 1232 Spacing Chart (Test Scoring) 4 Words per Inch	GX20-8041-1	
1230, 1231, 1232 Spacing Chart (Test Scoring) 3 Words per Inch	GX20-8042-0	
1230, 1231, 1232 Spacing Chart (Non Test Scoring) 5 Words per Inch	GX20-8043-0	

Subject Code		Order Number	Technical Newsletter
	1230, 1231, 1232 Spacing Chart (Non Test Scoring) 4 Words per Inch	GX20-8044-0	
	1230, 1231, 1232 Spacing Chart (Non Test Scoring) 3 Words per Inch	GX20-8045-0	
	General Purpose Card Punching Form	GX20-8096-0	
	1418/1428 Optical Readers Document Design and PDS Timing Chart	GX24-3039-1	
	1440, 1460 Console Status Sheet	GX24-3100-0	
		GX24-3100-1	
	1445 Printer Spacing Chart	GX24-3448-0	
80			
	Physical Planning Specifications (15)		
	Installation Planning Schedule	GX20-8010-0	
	7740 Physical Planning Templates	GX22-6795-0	
	1460 Physical Planning Template	GX24-3140-1	
	1401 Physical Planning Template	GX24-6482-5	
	General Programming Systems (20)		
	Proportional Record Layout and Format Form	GX20-1702-0	
	Scheduling Control Form — Programming Progress Chart	GX20-8011-0	
	Flowcharting Template	GX20-8020-0	
	AUTOCHART Flowchart Work Sheet	GX20-8021-2	
	1401, 1440, 1460 Program Chart	GX24-6437-2	
		GX24-6437-3	
	1401 Timing Estimate Sheet	GX24-6562-0	
	Symbolic Assembly Systems (21)		
	1401 Symbolic Programming System Coding Sheet	GX24-1152-3	
	7740 Assembly Program Coding Form	GX28-8147-0	
	Autocoder (22)		
	1401, 1410, and 1440 Autocoder Coding Sheet	GX24-1350-6	
	1401, 1410, 1440 Library Coding Form	GX24-6568-1	
	Cobol (24)		
	Cobol Program Sheet	GX28-1464-1	
	Fcrtran (25)		
	Fortran Coding Form	GX28-7327-6	
	Report Program Generator (28)		
	1401 and 1410 Report Program Generator, Input Specifications	GX24-1336-1	
	1401 and 1410 Report Program Generator, Data Specifications	GX24-1337-2	
	1401 and 1410 Report Program Generator, Calculation Specifications	GX24-1338-3	
	1401 and 1410 Report Program Generator, Format Specifications	GX24-1339-1	

Subject Code		Order Number	Technical Newsletter
	Fargo Report Specifications, Phases 4 and 1	GX24-6556-0	
	Fargo Report Specifications, Phase 1	GX24-6557-0	
	Fargo Report Specifications, Phase 2	GX24-6558-1	
	Fargo Report Specifications, Phase 3	GX24-6559-1	
	Report Program Generator: Data Specifications, 1401, 1440, 1460	GX24-6591-0	
		GX24-6591-1	
	Report Program Generator: Calculation Specifications 1401, 1440, 1460	GX24-6592-1	
	Report Program Generator: Format Specifications 1401, 1440, 1460	GX24-6593-0	
		GX24-6593-1	
80			
	Sort-Merge (33)		
	Control Card Formats for Sort 2, Merge 2, Sort 4, Sort 7, and Merge 7 with 1401 and 1460	GX24-3245-0	
	Miscellaneous Programs (48)		
	1401 Autotest Autocoder Control Card and Patch Coding Sheet	GX28-1585-0	
	1401 Autotest Tape and RAMAC File Generation Data Sheet	GX28-1586-0	
	Decision Logic Coding Form	GX20-8024-1	
85	***Reference Cards***		
	1230, 1231, 1232 Document Marking Instructions	GX21-9021-0	
	1401 Report Program Generator	GX24-1709-0	
	COBOL	GX28-1520-0	
90	**Education Literature**		
	This section lists publications and materials that are used in educational programs for the IBM 1401 and 1460. See abstract for description and availability.		
	1401 Programmer's Guide	GC24-1494-1	
		GC24-1494-2	
	1401 Basic Programming Course Description	GR20-9000-0	
		GR20-9000-1	
	1401 Accelerated Basic Programming Course Description	GR20-9001-1	
		GR20-9001-2	
	1401 Console Operator – Course Description	GR20-9010-3	
	1401 Fargo Course Description	GR20-9012-0	
		GR20-9012-1	

Subject Code		Order Number	Technical Newsletter
	1401 System Planning Course Description	GR20-9013-2	
	1401 Advanced Training Course Description	GR20-9029-1	
	1401 Autotest Course Description	GR20-9030-1	
	1401 Installation Planning Course Description	GR20-9031-1	
	1401 Programming System Course Description	GR20-9032-1	
	1401 RPG Course Description	GR20-9033-1	
	1401-1311 Disk Storage Programming Course Description	GR20-9034-2	
	1401 Basic SPS Programmed Instruction Course Description	GR20-9054-3	
	1401 Basic Programming Autocoder, Programmed Instruction Course Description	GR20-9055-2 GR20-9055-3	
	7740 Communication Control Package Course Description	GR20-9062-0	

99 *Supplementary Information*

IBM Marketing Publications KWIC Index	G320-1621-22	
Bibliography of Data Processing Techniques	GF20-8172-5	GN20-1002.25
Bibliography of Application Publications Finance Industries	GH20-0507-0	GN20-1077.1
Bibliography of Application Publications Distribution Industries	GH20-0522-0	GN20-1853
Bibliography of Application Publications Public Utility Industries	GH20-0530-0	GN20-1866
Bibliography of Application Publications Printing and Publishing Industries	GH20-0531-0	GN20-1867
Bibliography and Application Publications Insurance Industries	GH20-0536-0	GN20-1869

Part 2 — Machine Index

This part of the *IBM 1401 and 1460 Bibliography* cross-indexes reference material on specific system components with machine type number or feature name. The *IBM 1401 Systems Summary* (GA24-1401), *IBM 1401G Systems Summary* (GA24-3165), *IBM 1401H Systems Summary* (GA24-3476), and *IBM 1460 Systems Summary* (GA24-1496), which contain summaries of machine units, are not included in this index. Consult the *IBM 1401 Configurators* (GA24-1491 and GA24-3494) for the type number of each machine unit and the name of a special feature.

Machine		*Subject Code*	*Order Number*
729	Magnetic Tape Unit	01	GA24-3069
		05	GA22-6589
		15	GA24-1493
		15	GC24-1404
		19	GA22-6643
1009	Data Transmission Unit	09	GA24-1039
		15	GA24-1493
		19	GA24-1065
1011	Paper Tape Reader	01	GA24-3069
		03	GA26-5754
		15	GA24-1493
		15	GC24-1404
1012	Tape Punch	01	GA24-3069
		03	GA26-5776
		15	GA24-1493
		15	GC24-1404
1026	Data Transmission Unit	09	GA24-3244
		15	GA24-3233
1231 and 1232	Optical Mark Page Readers	01	GA24-3068
		03	GA21-9012
		13	GA21-9065
		15	GA24-1493
		15	GC24-1404
		19	GA21-9020
1285	Optical Reader	01	GA24-3068
		03	GA24-3256
		15	GA24-1493
		15	GC24-1404

Machine		*Subject Code*	*Order Number*
1301	Disk Storage Models 11, 12, 21, and 22	01	GA24-3070
		07	GA22-6784
		07	GA24-3157
		15	GA24-1493
1311	Disk Storage Drive	01	GA24-3070
		07	GA26-5756
		07	GA26-5991
		15	GA24-1493
		15	GC24-1404
		19	GA26-5713
1401	Processing Unit	01	GA24-3067
		01	GA24-3144
		01	GA24-6447
		01	GG24-1477
		13	GA24-3315
		15	GC24-1404
		19	GA24-1424
1402	Card Read-Punch	01	GA24-3067
		13	GA24-3071
		15	GA24-1493
		15	GC24-1404
		19	GA31-1400
1403	Printer	01	GA24-3067
		03	GA24-3073
		03	GA24-3205
		03	GA24-3488
		13	GA24-3071
		13	GL24-3102
		15	GA24-1493
		15	GC24-1404
		19	GA24-1431
1404	Printer Model 2	01	GA24-3067
		01	GA24-3068
		03	GA24-1446
		15	GC24-1404
		19	GA24-3356
1405	Disk Storage Unit Models 1 and 2	01	GA24-3070
		07	GA24-3085
		15	GC24-1404
1406	Storage Unit Models 1, 2, and 3	01	GA24-3068
		15	GC24-1404

Machine		*Subject Code*	*Order Number*
1407	Console Inquiry Station Model 1	01	GA24-3068
		15	GC24-1404
1409	Console Auxiliary	15	GC24-1404
1412	Magnetic Character Reader Model 1	01	GA24-3068
		03	GA24-1421
		13	GA24-3036
		15	GA24-1493
		15	GC24-1404
1418	Optical Character Reader Model 1, 2, or 3	01	GA24-3068
		03	GA24-1452
		03	GA24-1473
		13	GA24-3081
		15	GA24-1493
		15	GC24-1404
1419	Magnetic Character Reader	01	GA24-3068
		03	GA19-0004
		03	GA24-1499
		03	GC20-1607
		13	GA24-3036
		13	GA24-3342
		15	GA24-1493
		15	GC24-1404
1428	Alphameric Optical Reader	01	GA24-3068
		03	GA24-1452
		03	GA24-1473
		03	GA24-3059
		13	GA24-3081
		15	GA24-1493
		15	GC24-1404
1441	Processing Unit Model B	01	GA24-3067
		13	GA24-3315
		15	GA24-1493
1445	Printer Models 1 and N1	01	GA24-3068
		03	GA24-3120
		15	GA24-1493
		15	GC24-1404
1447	Console	01	GA24-3067
		03	GA24-3031
		13	GA24-3071
		15	GC24-1404
		15	GA24-1493
	Model 3 OEMI	19	GA24-3169

Machine		*Subject Code*	*Order Number*
1448	Transmission Control Unit	09	GA24-3010
		09	GA24-3030
		15	GA24-3233
		19	GA24-3192
1460	Processing Unit	01	GA24-3067
		01	GA24-6447
		13	GA24-3315
		15	GA24-1493
		19	GA24-3199
1461	Input/Output Control Models 1, 2, and 3	01	GA24-3067
		15	GA24-1493
1462	Printer Control Unit	01	GA24-3067
		15	GA24-1493
7330	Magnetic Tape Unit Model 1	01	GA24-3069
		05	GA22-6589
		15	GA24-1493
		15	GC24-1404
		19	GA22-6619
7340	Hypertape Drive Model 2	01	GA24-3069
		05	GA24-1470
		15	GA24-1493
		15	GC22-6674
		15	GC24-1404
7641	Hypertape Control	15	GA24-1493
		15	GC24-1404
7710	Data Communication Unit	15	GC24-1404
		19	GA22-6818
7740	I/O Instructions for 7740 Communication Control System and 1401, 1440, 1460	01	GA24-3068
		09	GA22-6753
		09	GA27-2705
		19	GA22-6802
7770	Audio Response Unit	01	GA24-3068
		15	GA24-1493
		15	GC24-1404

Part 3 — Abstracts

This part lists the abstracts for the IBM 1401 and 1460 publications and material by order number. In addition to presenting a brief description of an item, an abstract also gives, where applicable, the type of publication and the number of pages.

G320-1621 IBM Marketing Publications KWIC Index 99

This keyword index of IBM Marketing Publications is based on publication titles. Each title is shifted to the right, one keyword at a time, and placed in alphabetic and numerical order with all other keywords. (176 pages)

GA19-0004 IBM 1219 Reader-Sorter, Model 32 IBM 1419 Magnetic Character Reader, Model 32 (For World Trade Use Only) 03

Contains detailed information about the keys, lights, switches, mechanical features, and special features of the IBM 1219 Reader Sorter, Model 32 and the IBM 1419 Magnetic Character Reader, Model 32.

On-line and off-line data-flow and operating theory are fully discussed, with step-by-step procedures for each reader operation. Programming notes and error-correction routines are also covered in detail. (In the areas of on-line operation, error-recovery, and programming notes, this manual refers to the 1401 attachment only.)

For additional information readers are referred to: *IBM 1401/1460 Miscellaneous Input/Output Instructions*, GA24-3068. (56 pages)

GA19-0009 IBM 1401-1419 Expanded Codeline Input/Output Control Program (For World Trade Use Only) 30

Describes the Input/Output Control Program for the IBM 1419 Magnetic Character Reader with Expanded Codeline Feature used on-line with the IBM 1401 Data Processing System equipped with the Process Overlap Special Feature.

It includes machine requirements, descriptions of the IOCP routines and the user's program, and operating procedures.

This publication should be read in conjunction with *IBM 1219 Reader Sorter, Model 32, IBM 1419 Magnetic Character Reader, Model 32*, GA19-0004.

A knowledge of IBM 1401 Autocoder can be obtained from *Autocoder (on Tape) Language Specifications, and Operating Procedures*, GC24-3319.

GA21-9012 IBM 1231 and 1232 Optical Mark Page Readers 03

Describes the functions, controls, principles of operation, data flow, and programming for the IBM 1231 and 1232 Optical Mark Page Readers. Special features available are explained. Also included is a section on the IBM 534 Model 3 Card Punch. (28 pages)

GA21-9020 1231 Optical Mark Page Reader Original Equipment Manufacturers' Information 19

Contains information to assist non-IBM engineers who plan to attach the IBM 1231 Optical Mark Page Reader to their equipment. It includes a general description of machine functions, a reference listing of publications and engineering documents, and information concerning machine interface not readily available in other publications. (12 pages)

GA21-9065 IBM 1232 and 534 Custom Features Descriptions 13

Describes the effects of eight RPQ (Request for Price Quotation) features on the operations of the IBM 1232 Optical Mark Page Reader and the IBM 534 Card Punch Model 3. To use this publication effectively, the reader must be familiar with the standard operations of these two machines, as described in the SRL manual, *IBM 1231, 1232 Optical Mark Page Readers*, GA21-9012.

The eight RPQ features described in this publication are: #842023 — Punching Sequence and Code Modification; #F13918 — 1232 Alphabetic Feature; #841-95 — 534 Alphabetic Coding Device; #F15067 — Blank Character Select; #F15704 — Units-Position Overpunching (Numeric Machines); #W18417 — Units-Position Overpunching (Alphabetic Machines); #842042 — 534 Print Feature; #842024 — Printer Output Protection. (12 pages)

GA22-6589 729, 7330, and 727 Magnetic Tape Units Principles of Operation 05

This reference publication is a comprehensive reference manual on the use of IBM 727, 729 II, IV, V, VI, and 7330 Magnetic Tape Units. It includes principles of writing and reading coded data on magnetic tape, tape unit load and unload procedures, operating keys and lights, tape handling, organizing tape records, and reels, tape labeling and tape library records, tape error recovery procedures, and associated equipment. (44 pages)

GA22-6619 7330 Magnetic Tape Unit Original Equipment Manufacturers' Information 19

Gives specifications for attaching a control unit to the IBM 7330 Magnetic Tape Unit. (12 pages)

GA22-6643 729 II, IV, V and VI Magnetic Tape Units Original Equipment Manufacturers' Information 19

Includes information and specifications for use by a manufacturer of original equipment to be attached to 729 II, IV, V and VI Magnetic Tape Units. (40 pages)

GA22-6752 7740 Communication Control System: Systems Summary 09

The IBM 7740 Communication Control System with disk storage is a complete, independent, communication control center capable of message accounting, traffic reporting, billing, and other secondary operations.

This summary describes the characteristics of the system, variations possible in its internal makeup, possible communication line configurations, data processing systems with which it may be associated, outstanding features, and suggested appplications. (12 pages)

GA22-6753 7740 Communication Control System: Principles of Operation 09

This manual provides descriptions of components and programming basic to the operataion of the IBM 7740 Communication Control System. It acquaints the reader with the binary, character-oriented, odd-parity characteristics of the IBM 7741 Processing Unit and its word formats, registers, and operating modes. It describes some operations of the 7740 that are especially important in message control, such as starting the operation of communication lines with the 7740 and chaining blocks of storage to receive or transmit messages.

Principally, this manual is to provide a detailed description of the instructions used in the 7740 system. The description of each instruction includes the word format, function, and any special programming factors to be considered. Examples and likely applications are included wherever they might be helpful. (56 pages)

GA22-6776 IBM 7710 Data Communication Unit: Principles of Operation 20

This publication contains general information about the IBM 7710 Data Communication Unit in conjunction with the IBM 1401 System. It emphasizes two aspects: the principles of operation of the 7710, and the programming of the 7710 with regard to the 1401. In addition, the operating keys, lights, switches, and indicators contained in the operator's panel and the customer engineering panel of the 7710 are described. (28 pages)

GA22-6784 IBM 1301 and 1302 Disk Storage Sequential Data Organization 07

Describes a way of storing and retrieving data on IBM 1301 and 1302 Disk Storage that is largely independent of the characteristics of the application. The method enables most users to install and operate disk storage efficiently, with minimum detailed study of the data. A common set of programs and techniques can be used for all data files in disk storage. The approach allows data to be loaded in the most useful sequence, yet allows for random or sequential access to the records. As the data file is loaded, an index is created that associates data identifiers with actual track addresses and permits expansion by an easily used overflow technique. Conversion is accomplished in an orderly and efficient transition from data handling methods presently in use. (27 pages)

GA22-6802 7740 Communications Control System, OEMI 19

Describes the interface associating the IBM 7740 Communication Control System with communication line data subsets, the IBM 1050 Data Communication System, the IBM 1311 Disk Storage Drive, and the interface to an external data processing system. Each interface is described in terms of line functions and connector configuration.

Detailed information on the IBM equipment in the 7740 System can be found in applicable reference manuals for each unit. *IBM 7740 Communication Control System Principles of Operation,* GA22-6753, contains information on manual operation through console and operator panel, program procedures, loading from disk storage or a data processing system, and other information pertinent to message control. Detailed descriptions of the instructions used in the 7740 are included. (24 pages)

GA22-6818 7701, 7702, 7710, 7711 Original Equipment Manufacturers' Information 19

Contains interchange information for connection of the 7701, 7702, 7710, and 7711 to communications-channel equipment and data processing equipment. (20 pages)

GA24-1039 1009 Data Transmission Unit 09

Describes functional characteristics of the IBM 1009 Data Transmission Unit in relation to the IBM 1401 and 1410 Data Processing Systems. Discusses 1401 and 1410 instructions along with the console panel and related communications-company equipment. Outlines the operating principles and recommended checking procedures, and illustrates the logic of both 1401 and 1410 transmit and receive subroutines. (44 pages)

GA24-1065 1009 Data Transmission Unit Original Equipment Manufacturers' Information 19

Contains interchange information for the connection of the IBM 1009 Data Transmission Unit to communication channel terminal equipment and data processing equipment. Also included are:

1. Connector drawing
2. Connector reference charts
3. Specifications, and
4. Descriptions of the operator console panel indicators, keys, and switches. (24 pages)

GA24-1401 1401 System Summary 00

Contains brief descriptions of the machine features, components, configurations, and special features. Included is a section on programs and programming systems. (52 pages)

GA24-1421 1412 Magnetic Character Reader Model 1 03

Describes the features and functions of the IBM 1412 Magnetic Character Reader, Model 1. Explains in detail its operating principles, including document feeding, reading, and distribution, as well as control of both on-line and off-line operations. Sections on operating procedures, 1401-1412 stored program instructions, and programming notes are included.

Explains the use and operation of four special features: multiple-column-select — sort-suppress feature, auxiliary-document-counter, self-checking number verification, and electronic-accumulator and sequence-checking feature. (56 pages)

GA24-1424 1401 Processing Unit Original Equipment Manufacturers' Information 19

Provides sufficient data to satisfy the special needs of those who wish to attach their equipment to the IBM 1401 Processing Unit. It contains supplemental tie-in data not readily available in other IBM publications. Charts of cable layouts, connector receptacles, and power-plug pin assignments are included. (28 pages)

GA24-1431 1403 Printer Original Equipment Manufacturers' Information 19

This reference manual contains information to assist non-IBM engineers to attach their equipment to the IBM 1403 Printers. It contains a general description of machine functions, a reference listing of publications and engineering documents, and information concerning machine interface not readily available in other publications. (20 pages)

GA24-1446 1404 Printer 03

Describes the features, functional characteristics and operations of the IBM 1404 Printer, including sections on card feeding, printing, tape-control carriage operation, and the read-compare special feature. Discusses and illustrates 1404 instructions, and contains charts covering timing details. (24 pages)

GA24-1452 Print Quality Considerations IBM 1418 and IBM 1428 03

Contains a detailed description of print quality requirements of printing to be read by the IBM 1418 Optical Character Reader and the IBM 1428 Alphameric Optical Reader, and to be used as input to an IBM 1401 or IBM 1460 Data Processing System. Use of print-quality measuring devices is fully explained with examples of the range of acceptable printing produced by the IBM 407 Accounting Machine, IBM 1403 Printer, IBM SELECTRIC® Typewriter and IBM Electric Typewriter. (41 pages)

GA24-1470 7340 Hypertape Drive Model 2 05

Describes the attachment of the 7340 Model 2 to the 1401 and 1460. Because the hypertape drive can pack two consecutive numeric characters on tape as one 8-bit character, the speed of the hypertape drive ranges from 34,000 to 68,000 characters a second. As many as four hypertape drives can be connected to a 1401 or 1460 through the IBM 7641 Hypertape Control Unit and the serial I/O adapter feature. The IBM 729 and 7330 Magnetic Tape Units can be connected to the same system for off-line conversion of existing tape libraries to hypertape for large-scale system use. (20 pages)

GA24-1473 1418 Optical Character Reader 1428 Alphameric Optical Reader 03

Describes the operation of the 1418 and the 1428 as input devices to the 1401. Included are a description of character- and mark-reading capabilities, off-line sorting, document-design requirements, and examples of the range of acceptable print quality on the documents to be scanned. The use of the IBM 1418 and 1428 Document Design and PDS Timing Chart and the formulas for calculating document output and maximum character reading per document are also fully discussed as an aid in optimizing the design of documents to be read. (44 pages)

GA24-1491 1401 Configurator 00

Presents a schematic representation of the units that can make up an IBM 1401 Data Processing System. Shows the features required to attach these units and the models and special features available for each unit. (2 pages)

GA24-1493 1460 Data Processing System Installation Manual — Physical Planning 15

Contains information needed for physical installation of a 1460 system: physical characteristics; service clearances; cable, electrical power, and environmental requirements. (12 pages)

GA24-1495 1401 and 1460 Bibliography 00

(See front cover)

GA24-1496 1460 System Summary 00

Contains brief descriptions of machine features, components, configurations, and special features. Also included is a section on programming systems, and programming publications available for the 1460 system. (24 pages)

GA24-1499 IBM 1219 Reader Sorter IBM 1419 Magnetic Character Reader 03

This publication describes the operating characteristics, controls, indicators, and features of the IBM 1219 Reader Sorter and the IBM 1419 Magnetic Character Reader. Operating theory and procedures are given for off-line operation of both machines and on-line operation of the IBM 1419 within the 1400 series and System/360 systems.

Document handling and data flow are discussed fully, and step-by-step procedures and practical examples are given for each machine. Programming notes and error recovery procedures are also given. (96 pages)

GA24-3010 1448 Transmission Control Unit 09

This publication includes a description of the IBM 1448 Transmission Control Unit as a link between an IBM 1440 or 1460 Data Processing System and a network of as many as 40 half-duplex communication lines. Each line can have a number of terminals. The description of this IBM teleprocessing system includes appearance, operation, functions, programming aspects and special features. Also discussed are communication codes, communication terminology, and line control.

This publication is for those familiar with the programming and operation of the data processing system to which the 1448 is connected.

Because the 1448 serves the processor, many functions of both are independent. Included here are the scan operation, the interrupt routine, and related programming operations. (40 pages)

GA24-3030 Message Rates for the IBM 1448 Transmission Control Unit 09

The graphs and descriptions in this publication can be used to find the overall message transmission and processing rates for terminals attached to a 1448.

The key with each graph illustrates how to calculate the required unknown, whether it is message length, lines required, process time, or processing rate. (16 pages)

GA24-3031 1447 Console 03

Contains a detailed description of all models of the IBM 1447 Console, with sections describing the applicable keys, dials, switches, and indicator lights. It also contains information on the console I/O printer. The required and available special features (including IBM 1050 components) are also described. (32 pages)

GA24-3036 Endorser Special Features for IBM Magnetic Character Readers 13

Describes the features, functions, operating procedures for the endorser special features for the 1219 Reader-Sorter and IBM 1412 and 1419 Magnetic Character Readers. Setup and operating procedures are explained. Endorser plate specifications are also included. (12 pages)

GA24-3067 System Operation Reference Manual 01
IBM 1401 Data Processing System
IBM 1460 Data Processing System

This reference publication contains the introduction and basic instruction set for the IBM 1401 and IBM 1460. The operation code for each instruction is given in actual and mnemonic form, with examples of each. The formula for calculating the execution time of each instruction is also included.

In addition, this manual presents the instructions and applicable timings for the IBM 1402, 1403, 1406, and 1447.

This manual is the first of five reference manuals providing the complete instruction set for the IBM 1401 and 1460. The other four manuals are:

Miscellaneous Input/Output Instructions, GA24-3068
Tape Input/Output Instructions, GA24-3069
Disk Input/Output Instructions, GA24-3070
Special Feature Instructions, GA24-3071

To accommodate a particular system configuration, any combination of these five manuals can be placed in a single binder for the user's convenience. (74 pages)

GA24-3068 Miscellaneous Input/Output Instructions 01
IBM 1401 Data Processing System
IBM 1460 Data Processing System

This publication contains a description of the instructions used by the IBM 1401 or 1460 to operate these miscellaneous input/output units:

IBM 1009 Data Transmission Unit
IBM 1404 Printer
IBM 1407 Console Inquiry Station
IBM 1418 Optical Character Reader
IBM 1428 Alphameric Optical Reader
IBM 1412 Magnetic Character Reader
IBM 1419 Magnetic Character Reader
IBM 1448 Transmission Control Unit
IBM 1026 Transmission Control Unit
IBM 1231 Optical Mark Page Reader
IBM 1285 Optical Reader
IBM 1445 Printer
IBM 7740 Communication Control System
IBM 7770 Audio Response Unit Model 1

Timing information is included for each unit attached to an IBM 1401 or 1460 Data Processing System. (78 pages)

GA24-3069 Tape Input/Output Instructions 01

Contains a description of the instructions used by the data processing system to operate these attached tape units: 729, 1011, 1012, 7330, and 7340. Timing information is included for each I/O device described. (30 pages)

GA24-3070 Disk Storage Input/Output Instructions 01

Contains a description of the instructions used by the IBM 1401 and 1460 Data Processing System to operate the disk-storage units attached to it.

The instructions and timing for the following disk-storage units are included:

IBM 1405 Disk Storage
IBM 1311 Disk Storage Drive
IBM 1301 Disk Storage

Timing information is also included on each disk-storage unit. (46 pages)

GA24-3071 Special Features of IBM 1401 and 1460 Data Processing Systems 13

The special features described here are available for the 1401 and/or 1460. Each feature is described and identified for the system to which it can be applied. These features offer additional flexibility in applications where special processing requirements exist. Also included are the instructions for the special features on the IBM 1402, 1403, 1447, and 1009 when these units are used with the IBM 1401 or 1460. (72 pages)

GA24-3072 1402 Card Read-Punch 03

This publication covers the IBM Models 1, 2, 3, 4, 5, and 6. Included are descriptions of major mechanical units, their functions and operating controls, and special features that can be installed to expand the capabilities of the basic machine. (20 pages)

GA24-3073 1403 Printer 03

This reference publication describes the various models of the 1403 Printer used with IBM 1401, 1410, 1440, 1460, 7010, 7040, 7044, and System/360 Models 20 through 85 Data Processing Systems.

The functional and operating characteristics of the printer are presented.

Special features available for the 1403 are included, and timing information is given for printing and paper movement. (56 pages)

GA24-3081 Mark Read Station (Slanted Mark) for 1418 and 1428 13

This publication describes the Mark Read Station (Slanted Mark) special feature. This feature is available for the IBM 1418 Optical Character Reader and the IBM 1428 Alphameric Optical Reader. A description of the following functional specifications is included.

Document Specifications
Mark Reading
Document Format
Document Corner Cuts
Document Feeding
Description of the Slanted Mark Reading Gage.

This publication is for those familiar with programming and operating the IBM 1418 and 1428 as described in: *Programming for the IBM 1418 and 1428 Optical Readers,* GC24-1091 and *IBM 1418 Optical Character Reader and IBM 1428 Alphameric Optical Reader,* GA24-1473. (12 pages)

GA24-3085 1405 Disk Storage 07

Describes the operation of the IBM 1405 Disk Storage with the IBM 1401 Data Processing System. The functional and operating characteristics of the disk storage unit are described as are the special features and timings. (8 pages)

GA24-3120 IBM 1443 Printer Models 1 to 4 and N1
IBM 1445 Printer Models 1 and N1 03

This reference publication describes the operation of the 1443 and 1445 Printers with the IBM 1240, 1401, 1440, 1450, 1460, 1800, and certain models of the IBM System/360 Data Processing System.

It also discusses timing information for the printer and the tape-controlled carriage as well as their functional and operating characteristics. The speed of the printer using character sets is also described.

The publication also includes command, sense, and status information pertaining to the printers used with System/360 Data Processing Systems. (32 pages)

GA24-3144 IBM 1401 Data Processing System Operator's Guide 01

Describes the operating features and procedures for each of the units of an IBM 1401 system. Several operations that use two or more units of the system are also described. One section outlines recommended procedures for restarting system operation after an error condition in the 1402 or 1403.

For the operator's convenience, the logic of a 1401 system is discussed briefly. This includes addressing, phases of operation, internal checking, and coding structures. (100 pages)

GA24-3157 IBM 1301 Disk Storage Models 11, 12, 21, and 22 07

Describes the operation of an IBM 1301 Disk Storage unit. It explains the uses of the keys and lights on the unit, and it includes timing information. (12 pages)

GA24-3165 IBM 1401G System Summary 00

Contains brief descriptions of the machine units, special features, and simultaneous input/output unit operations, called interleaving, on the IBM 1401 Data Processing System, Model G.

Also included are sections on programs and programming systems, and timing on individual and multiple input/output operations (with and without interleaving). (10 pages)

GA24-3169 IBM 1447 Console Model 3 Original Equipment Manufacturers' Information 19

Provides information to assist non-IBM engineers who wish to attach the IBM 1447 Model 3 Console to their equipment. It contains a general description of machine functions, a reference listing of publications and engineering documents, and information concerning machine interface not readily available in other publications. (14 pages)

GA24-3192 1448 Transmission Control Unit Original Equipment Manufacturers' Information 19

This manual contains supplemental data to satisfy the special needs of non-IBM engineers who want to attach their equipment to the IBM 1448. General timing and control philosophy are outlined for processor attachment. Line control and message format are covered for data terminal attachment. Interface lines and their requirements are discussed, along with charts of cable layouts and connectors.

Most of this information is of a supplemental nature and is not included in other IBM publications. A current list of available related publications is included for reference. (36 pages)

GA24-3199 IBM 1460 Original Equipment Manufacturers' Information 19

Contains information to assist non-IBM engineers who plan to attach non-IBM equipment to the IBM 1460 Processing Unit. It includes a general description of machine functions, a reference listing of directly related publications and engineering documents, a list of recommended tools and test equipment, cable part numbers and dimensions, and information concerning machine interface not readily available in other publications. (36 pages)

GA24-3205 1403 Printer Model 3 80

Describes the Preferred Character Set feature for the IBM 1416 Interchangeable Train Cartridge on the IBM 1403 Printer Model 3. The minimum and maximum lines-per-minute speed that can be achieved with the different level-modes of printing are also included. (4 pages)

GA24-3233 1448 and 1026 Transmission Control Units Installation Manual — Physical Planning 15

Contains pertinent, detailed physical planning information for the IBM 1026 and 1448 Transmission Control Units. It supplements physical planning publications for the IBM data processing and communication systems with which these units can be used. In addition to physical planning specifications and requirements, information concerning connections to customer-installed and common-carrier communication facilities is included. A brief introduction to communication techniques is also presented. (16 pages)

GA24-3244 1026 Transmission Control Unit 09

Describes the IBM 1026 Transmission Control Unit as a link between an IBM 1240, 1401, 1440, or 1460 Data Processing System and the terminal on a single communications line. As many as four 1026 units can be attached to a system. The description of this IBM teleprocessing unit includes appearance, operation, functions, programming aspects, and special features. Also discussed are communication codes, communication terminology, and line control.

This publication is for those familiar with the programming and operation of the data processing system to which the 1026 is connected. (36 pages)

GA24-3256 IBM 1285 Optical Reader 03

This publication describes the functional and operating characteristics of the IBM 1285 Optical Reader. Also presented are descriptions of the instructions used to program operations on the 1285 and the input document requirements related to print quality, format, and type of paper. (16 pages)

GA24-3315 Custom Features for IBM 1401, 1440, and 1460 Data Processing Systems 13

Contains brief descriptions of some of the custom features available for the IBM 1401, 1440, or 1460 Data Processing Systems. Availability of these features can be determined by requesting a price quotation from IBM. (24 pages)

GA24-3342 Batch Numbering Feature for IBM 1241 and 1419 Magnetic Ink Character Recognition Readers 13

Describes the functions and features of the Batch Numbering special feature when used with the IBM 1241 Magnetic Ink Character Recognition Reader and the IBM 1419 Magnetic Character Reader.

The operation of the keys, lights, and switches, as well as the programming information needed to operate the feature, is covered in detail. (16 pages)

GA24-3356 IBM 1404 Printer Model 2 Original Equipment Manufacturers' Information 19

This reference manual contains information to assist non-IBM engineers to attach their equipment to the IBM 1404 Printer Model 2. It contains a general description of machine functions, a reference listing of publications and engineering documents, and information concerning machine interface not readily available in other publications. (18 pages)

GA24-3476 IBM 1401H System Summary 00

Contains brief descriptions of the machine features, components, and special features. Also included is a section on programming systems available for this system. (12 pages)

GA24-3488 Form-Design Considerations — System Printers 03

Contains information to be considered by personnel designing, ordering, or using forms for the IBM 1403, IBM 1443, IBM 2203, IBM 2213 or IBM 5203 Printer. (24 pages)

GA24-3494 IBM 1401 Model H Configurator 00

Presents a schematic representation of the units that make up an IBM 1401H Data Processing System. Shows the features required to attach these units and the models and special features available for each unit. (2 pages)

GA24-6447 IBM 1401/1460 Instruction and Timing Summary 01

Summarizes instructions and timings for the 1401 and 1460 systems. Listed for each instruction is: instruction name, operation code, mnemonic, operands, d-character, wordmarks required, address registers after operation, remarks and timings. (28 pages)

GA26-5713 IBM 1311 Disk Storage Drive Original Equipment Manufacturers' Information 19

Provides information to assist engineers in attaching the IBM 1311 Disk Storage Drive to equipment not manufactured by IBM. Included are lists of applicable publications, engineering documents, and cable interface identification for the 1311, Models 1, 2, 3, 4, and 5. (52 pages)

GA26-5754 IBM 1011 Paper Tape Reader 03

Contains information that describes the operating features, components, control panel, and tape handling and loading procedures for the IBM 1011. (24 pages)

GA26-5756 IBM Disk Pack and Cartridge Handling Procedures 07

This manual is a guide for handling IBM Disk Packs and Cartridges. The information contained in this manual applies to IBM 1316 and 2316 Disk Packs and 2315 Disk Cartridges. (12 pages)

GA26-5776 IBM 1012 Tape Punch 03

Contains information that describes the operating features, components, tape specifications and tape loading procedures for the IBM 1012. (12 pages)

GA26-5991 IBM 1311 Disk Storage Drive 07

Describes the operating principles and features of the IBM 1311 Disk Storage Drive and the IBM 1316 Disk Pack as they are used with IBM Systems.

Included in the manual is a description of the operating keys and lights, and of disk pack operating and handling procedures.

The information in this manual supplements the information contained in the System Reference Library manuals for the following IBM Systems: IBM 1240 Bank Data Processing System; IBM 1401 and 1460 Data Processing Systems; IBM 1410 and IBM 7010 Data Processing Systems; IBM 1440 Data Processing System; IBM 1620 Data Processing System; IBM 1710 Control System; IBM 7740 Communication Control System.

Information about *addressing* disk storage, programming considerations, and special features is contained in the respective system reference manuals. (12 pages)

GA27-2705 Original Equipment Manufacturers' Information — IBM 7770 Audio Response Unit Models 1 and 2 19

This manual contains information to assist in designing non-IBM equipment for, and attaching non-IBM equipment to, the IBM 7770 Audio Response Unit, Models 1 and 2. It contains a general description of machine functions, a reference listing of publications and engineering documents, and information concerning machine interface not readily available in other publication. (48 pages)

GA31-1400 1402 Card Read-Punch Original Equipment Manufacturers' Information 19

Provides technical information for those who wish to attach the IBM 1402 Card Read-Punch to their own equipment. Voltage requirements, connector impulses and requirements are included. (16 pages)

GC20-1601 Catalog of Programs for IBM 1240, 1401, 1440, 1450, and 1460 Data Processing Systems 20

This catalog contains a complete listing of all programs for the IBM 1240, 1401, 1440, 1450, and 1460 Data Processing Systems available from the Programming Information Department, 40 Saw Mill River Road, Hawthorne, New York 10532.

Instructions for ordering programs are contained in the section of the introduction entitled "How to Order Programs." (80 pages)

GC20-1607 High-Speed Reader-Sorter Operations Manual 03

This manual is meant primarily for operators of IBM 1419/1401 configurations. It contains: a discussion of recommended machine placements and system operating principles; a description of operating controls; operating, jam-clearing and restart procedures; cleaning and maintenance procedures; operator's tips and supervisor responsibilities; operation and maintenance of special features; a training program outline; and examples of statistical forms and run book pages. (72 pages)

GC22-6674 IBM 7340 Hypertape Drive Model 2 for IBM 1401/1460, 1410 Systems — Physical Planning Specifications 15

Describes specifications of size, environment, cable lengths, power consumption, and weight of the 7340 Hypertape drive and control. (2 pages)

GC22-6777 Utility Programs for IBM 1401 Equipped with the IBM 7710 Data Communication Unit 32

Describes the utility programs provided for the IBM 1401 equipped with an IBM 7710 Data Communication Unit. These utility programs are:

1401-7710 Tape Transmit Utility Program
1401-7710 Tape Receive Utility Program
1401-7710 Transmit-Receive Utility Program. (8 pages)

GC24-1091 Programming for the IBM 1418/1428 Optical Readers 48

Describes the IBM 1401 and 1460 — 1418/1428 instructions and the factors that contribute to efficient operation of the system. Also included are: a block diagram illustrating the instructions used in a sample program, programming for a non-continuous-feed operation, and a description of a typical batch-balancing procedure at time of conversion.

The readers of this publication should be familiar with the Systems Reference Library publication, *IBM 1418 Optical Character Reader and IBM 1428 Alphameric Optical Reader*, GA24-1473.

GC24-1404 1401 Data Processing System Installation Manual — Physical Planning 15

Contains pertinent, detailed physical-planning information for the IBM 1401 Data Processing System. Dimensions, weights, service clearances, electrical requirements, and environmental specifications are listed separately for each unit of the system. Information on interunit cabling is provided in a cable-diagram and cable-requirements chart. A summary of specifications is included for ready reference. (40 pages)

GC24-1420 Sort Programs for 1401-1311 and 1460-1311, Specifications and Operating Procedures Generative Program Sort 6 Object Program Sort 61, 62, 63, 64 33

This reference publication discusses:

Sort 6 Specifications describes the requirements for generating a sort object program.

Sort 6 Operating Procedures describes the Sort 6 program deck, preparation of the Autocoder system pack and library for generation, and the operating procedures to be followed when generating a sort object program.

Sort Object-Program Specifications describes the characteristics of object programs generated by Sort 6 and the requirements for executing the object programs. Sorts 61, 62, 63, and 64 are discussed in this section.

Sort Object-Program Operating Procedures describes the IBM-supplied generalized object decks (Sort 61, 62, 63, and 64), the insertion of user-prepared control cards in the object deck, the operating procedures to be followed when executing the object program, and the halts and messages that are associated with the sort object programs.

GC24-1451 Disk File Organization Routines Specifications IBM 1401-1405 34

Contains the specifications of the IBM 1401-1405 disk file organization programming system based on the chaining method. Six routines make up three general programs:

1. Chain-Loading programs
2. Chain-Addition programs
3. Chain-Maintenance programs.

Chaining is an indirect addressing method that offers an efficient, overall solution to the problems of file organization, maintenance, and retrieval of information in an IBM 1401-1405 system.

The programming system described in this publication operates on a 1401-1405 system with a minimum of 4,000 positions of core storage, and it uses no special features. (20 pages)

GC24-1455 Fortran Specifications and Operating Procedures IBM 1401 25

This reference publication contains the language specifications necessary to code a 1401 Fortran source program and the procedures for assembling and running the object program. In addition to describing the 1401 Fortran language, the specifications section also contains descriptions of:

1. Control card
2. Phases of the compiler
3. Arithmetic and input/output routines generated by the compiler
4. 1401 Fortran facility for linking programs or segments for continuous processing and
5. Input/output routine option provided in 1401 Fortran.

In addition to the procedures for assembling and running the object program, the operating procedures section also includes explanations of:

1. Compiler output
2. Compiler diagnostics
3. Object-program storage allocation and
4. Object-program halts.

The reader should be familiar with the *Fortran General Information Manual*, GF20-8074, and the IBM 1401 configurations required for the assembly and the execution of the object program. (64 pages)

GC24-1456 Sort 7 Timing Specifications and Operating Procedures IBM 1401 and 1460 Data Processing Systems 33

Contains the specifications and operating procedures for the Sort 7 Timing Program, Version 1. The first section discusses the machine requirements, program deck, control cards, and timing charts. The second section describes system preparation, messages, and halts.

Also included are 144 sort-timing comparison tables of the Sort 7 program run on IBM 1401 and 1460 Data Processing Systems. The parameters involved are explained.

The user should be familiar with *Sort 7 Specifications and Operating Procedures for IBM 1401 and 1460*, GC24-3317.

GC24-1462 1401 Input/Output Control System (on Tape), Specifications and Operating Procedure 30

Describes the programming required to use IOCS to control the input/output of data from card reader, card punch, printer, and tape files. Explains in detail the IOCS descriptive entries (DIOCS and DTF) and macroinstructions. Defines the types of data records and labels handled by IOCS. Includes two sections especially useful to experienced programmers:

1. Summaries — listing storage area considerations, main instructions and processing-overlap.
2. Program Operation — describing IOCS library routines, labels, halts, and error indications.

Assumes a knowledge of 1401 Autocoder. (44 pages)

GC24-1464 Fargo 28

Fourteen-o-one Automatic Report Generating Operation (*Fargo*) is a report generator that does not require expert knowledge of programming techniques. The manual describes the writing of report specifications and the preparing of *Fargo* control cards to produce the desired report. This programming system requires a card-input 1401 system having at least 4,000 positions of core storage. (50 pages)

GC24-1480 IBM 1401 Symbolic Programming Systems 21

This manual provides programmers with the information necessary to code a 1401 program in SPS language and assemble a machine-language object-program. It is assumed that the programmer has a basic knowledge of 1401 machine language programming.

It describes symbolic programming principles and concepts and gives detailed specifications of the 1401 Symbolic Programming Systems, SPS-1 and SPS-2.

Operating instructions for processing the SPS source program are enumerated. The SPS processor program can assemble a machine language program on configurations of the 1401 Data Processing System equipped with a 1402 Card Read-Punch.

A sample program is included for the convenience of the beginning SPS programmer. Input and output forms, a block diagram of the program procedure, the symbolic program, and SPS output listings of the symbolic and machine-language programs are shown. (48 pages)

GC24-1484 Disk-Utility Programs for 1401, 1440, 1460 — 1301/1311: Specifications 32

This publication contains the specifications of nine disk-storage utility programs for IBM 1401, 1440, and 1460 Systems equipped with either or both 1301 and 1311 disk storage. The programs are:

Clear Disk Storage	Copy Disk
Disk to Tape	Print Disk
Tape to Disk	Disk Record Load
Disk to Card	Disk Label.
Card to Disk	(36 pages)

GC24-1489 Input/Output Control System (on Disk) for IBM 1401/1460-1311: Specifications 30

Describes the programming required to use IOCS to control the input/output of data from card reader, card punch, printer, disk, and tape files. The IOCS descriptive entries (DIOCS and DTF) and macroinstructions are explained in detail. The types of processing and types of records handled by IOCS are defined.

The IBM 1401/1460 IOCS (on Disk) program is a supplement to the IBM 1401/1440/1460 Autocoder (on Disk) program. The reader should be familiar with the specifications for this program, described in the SRL publication, *Autocoder (on Disk) Program Specifications and Operating Procedures, IBM 1401, 1440, and 1460,* GC24-3259. For a more complete understanding of the organization of records on disk, he should also review the disk file-organization routines. (72 pages)

GC24-1492 Cobol (on Tape), Specifications, 1401 24

Describes the specifications for writing a 1401 *Cobol* program for an IBM 1401 having at least 4,000 positions of core storage. Specific examples and a sample problem demonstrate coding of *Cobol* statements. This publication assumes a basic knowledge of *Cobol* programming. (44 pages)

GC24-1494 1401 Programmers' Guide 90

Discusses 1401 programming as a text book to help the student learn and apply the operations of the IBM 1401 Data Processing System. (100 pages)

GC24-3012 Standard Labeling Procedure for IBM 1311 Disk Storage Drive 48

Describes the conventions used in labeling files on the pack for the IBM 1311. It also outlines the format specifications for standard labels. (8 pages)

GC24-3025 Direct Data Channel IOCS for IBM 1401, 1440, and 1460: Specifications (Communications IOCS) 30

Provides additional descriptive entries and macroinstructions, supplementing basic IOCS for the IBM 1401 or 1460 and the IBM 1440, that allow direct-data-channel (system-to-system) connection of 1401, 1440, and 1460 systems. Specifies machine requirements and describes user routines and error procedures. (10 pages)

GC24-3038 Comparison of Sort 2-Version 2 Timing for 1401 and 1460 33

Contains 72 sort timing tables of the Sort 2-Version 2 program run on the 1401 and the 1460. This program, when used with the 1460, results in an appreciable savings in sort run time. The various parameters involved are explained in the introduction of the publication. (12 pages)

GC24-3047 IOCS Specifications IBM 1460 with IBM 1448 (1401 and 1460 Communications IOCS — 1448-DDC) 30

Supplements *IOCS for IBM 1440-1448, Specifications,* GC24-3024, with minor modifications that allow this programming system to be used with IBM 1460-1448 systems. (2 pages)

GC24-3053 Merge 6 Specifications and Operating Procedures: IBM 1401 and 1460 33

This publication describes the Merge 6 program, its capabilities, phases, and merge object program. The control and parameter cards by which a user can tailor the program to his specific needs are also explained.

This publication is intended for use with *Input/Output Control System (on Disk) for IBM 1401/1460-1311: Specifications,* GC24-1489.

The user should also become familiar with: *Autocoder (on Disk) Language Specifications for IBM 1401, 1440, and 1460,* GC24-3258 *and Autocoder (on Disk) Program Specifications and Operating Procedures for IBM 1401, 1440, and 1460,* GC24-3259. (42 pages)

GC24-3057 Sort 3 for IBM 1401: Specifications 33

Contains a description of the Sort-3 program for the IBM 1401 Data Processing System with IBM 1405 Disk Storage. Sort 3 is a generalized program that can be modified by control-card information supplied by the user. The program uses the 1405 to sort records written either on magnetic tape or in disk storage. The records are sorted and then written on magnetic tape or in disk storage. (8 pages)

GC24-3060 Sort 4 for IBM 1401: Specifications 33

Contains a description of the Sort-4 generalized tape-sorting program. Sort 4 is designed to operate on the IBM 1401 Data Processing System with the processing overlap special feature. (12 pages)

GC24-3077 Sort 3 for IBM 1401: Operating Procedures 33

Contains the operating procedures for the Sort-3 program. Use this publication with the SRL publication *Sort 3 for the IBM 1401: Specifications,* GC24-3057. Sort 3 is a generalized sorting program designed for use on the 1401 that has an IBM 1405 Disk Storage. The program sorts a file written on magnetic tape or in disk storage into either ascending or descending sequence. The file is sorted according to control data, which can be 193 characters long and can be contained in as many as 10 fields. It is then written in sequence either on magnetic tape or in disk storage. (24 pages)

GC24-3087 Sort 4 for IBM 1401: Operating Procedures 33

Contains the operating procedures to be used with *Sort 4 for the IBM 1401: Specifications,* GC24-3060. Sort 4 is a generalized program that uses the processing-overlap special feature, and is designed for use on the 1401 with a minimum of four IBM 729 II, 729 IV, 729 V, or 7330 Magnetic Tape Units. The program sorts a file written on magnetic tape into either ascending or descending sequence. The file is sorted according to control data, which can be 999 characters long and can be contained in as many as ten fields, and is then written in sequence on magnetic tape. (28 pages)

GC24-3105 Disk-Utility Programs for IBM 1401-1301/1311: Operating Procedures 32

Contains the procedures to follow to operate these disk-utility programs for the 1401-1311: Clear Disk Storage, Disk to Tape, Tape to Disk, Disk to Card, Card to Disk, Copy Disk, Print Disk, Disk Record Load, and Disk Label. The reader should be familiar with the SRL publication, *Disk-Utility Programs for IBM 1401, 1460-1301/1311: Specifications,* GC24-1484. (32 pages)

GC24-3128 Disk-File Organization Routines for IBM 1401-1311: Operating Procedures 34

Contains procedures to be followed to generate and run the IBM 1401-1311 Disk-File Organization Routines. The reader should be familiar with the SRL publication *Disk-File Organization Routines Specifications, IBM 1401, 1440, 1460 (1311 and 1301),* GC24-3185. (40 pages)

GC24-3132 IBM 1401 Hypertape Utility Programs: Operating Procedures 32

Contains the operating procedures of five utility programs for use on IBM 1401 systems equipped with the IBM 7340 Hypertape Drive, Model 2. The primary function of these programs is to enable the 1401 to perform certain peripheral functions for large-scale hypertape systems. The operating procedures in this publication are:

Card-to-Hypertape program
Hypertape-to-Card program
Hypertape-to-Printer program
Hypertape-to-½-Inch Tape program
½-Inch-Tape-to-Hypertape program.

This publication is divided into two sections: the first section describes the minimum machine requirements and the special optional cards that are common to all five programs; the second section describes the detailed operating procedures for each of the five programs in the order listed previously.

It is assumed that the user has reference to *IBM 7340 Hypertape Drive, Model 2,* GA24-1470. (38 pages)

GC24-3146 Cobol (on Tape) Operating Procedures IBM 1401 24

Describes the operating procedures used to assemble a machine-language program from a source program written in 1401 *Cobol* language. It also describes the operating procedures for producing and modifying the *Cobol* tapes, the phases that make up the *Cobol* processor program, and lists diagnostic and error messages in detail. (31 pages)

GC24-3156 Tape Utility Programs with 120-Character Label Capability for IBM 1401 and 1460: Specifications and Operating Procedures 32

Contains the specifications and operating procedures of IBM 1401 or 1460 Data Processing Systems. The programs are:

Card-to-Tape
Tape-to-Card
Tape-to-Printer.

These programs perform a function similar to that performed by three antecedent programs described in the publication: *Utility Programs for IBM 1401 Tape Systems: Specifications,* GJ24-1411. These three new programs differ from the former in the following ways:

The capability of processing the IBM standard 120-character tape labels, using procedures similar to those available from IOCS.
A simplified exception procedure.
The selective processing of tape files identified by tape header labels.
An end-of-job option providing:
1. No rewind
2. Rewind
3. Rewind and unload.

(28 pages)

GC24-3166 Basic 4K Report Program Generator Specifications IBM 1401 and 1460 28

The IBM 1401 and 1460 Basic 4K Report Program Generator, with *load-and-go* capability, produces programs that write reports of variable format. This publication explains the writing of report specifications and the preparation of source decks, to produce object programs.

The language used for the report specifications is problem-oriented rather than machine-oriented. Therefore, little knowledge of machine-language coding is required. (36 pages)

GC24-3170 Basic Autocoder 2K Specifications for IBM 1401/1460 22

Contains language specifications for the IBM 1401 Basic Autocoder 2K system. Also included are machine requirements; explanations of the source program, processor program, and the coding sheet; and information requirements necessary to write a Basic Autocoder 2K statement. The coding sheet used with this Basic Autocoder is the *Autocoder Coding Sheet,* GX24-1350.

Descriptions of Basic Autocoder 2K statements are presented in a special format that describes the operation which the statement performs, shows how the statement is written by the programmer, states the action of the processor program during processing of the symbolic program, describes the effect (if any) of the statement on the object program, and shows an example that uses the statement.

The user may find the SRL publication *Basic Autocoder 2K Operating Procedures,* GC24-3262 helpful in planning and organizing his program and in assembling, patching, and running the object program.

GC24-3174 Communications IOCS Operating Procedures IBM 1401 and 1460 (1401/1460 Communications IOCS — 1448/DDC) 30

This publication provides IOCS (Input/Output Control System) operating procedures for IBM 1401 systems that can include the IBM 729, 1311, 1402, 1403, 7330, and direct data-channel feature, and for IBM 1460 systems that can include these same I/O facilities plus the IBM 1448. It supplements *Autocoder (on Disk) Program Specifications and Operating Procedures for IBM 1401, 1440, and 1460,* GC24-3259.

Specifications for the IOCS programming systems included in these operating procedures are available in:

Input/Output Control System (on Disk) for IBM 1401/1460-1311: Specifications, GC24-1489

IOCS Specifications for IBM 1460 with IBM 1448 (1401/1460 Communications IOCS — 1448/DDC), GC24-3047

Direct Data Channel IOCS for IBM 1401, 1440 and 1460: Specifications (Communications IOCS), GC24-3025.

These operating procedures should be used only for 1401 systems that include the direct data-channel feature and for 1460 systems that include either the IBM 1448 or the direct data-channel feature. (12 pages)

GC24-3176 Sort 5 and Sort 6 Timing Program Specifications and Operating Procedures IBM 1401 and 1460 33

This reference publication presents the specifications and operating procedures for the Sort 5 and Sort 6 Timing Program. An IBM 1401 or 1460 Data Processing System with the required machine configuration can be used to produce Sort 5 timing estimates for disk files to be sorted on any IBM 1440 Data Processing System, and Sort 6 timing estimates for disk files to be sorted on any IBM 1401 or 1460.

The first section of this publication discusses machine requirements, the program deck, timing considerations, and program information requirements. The second section describes system preparation, messages, and halts.

The user should be familiar with *Sort Programs for IBM 1440-1311 Specifications and Operating Procedures,* GC24-3314, and with *Sort Programs for 1401-1311 and 1460-1311, Specifications and Operating Procedures,* GC24-1420. (30 pages)

GC24-3185 **Disk File Organization Routines Specifications IBM 1401, 1440, 1460 (1311 and 1301)** **34**

Contains the specifications of four separate but similar packages of disk-file organization routines. The four packages and the system configurations on which they are used are:

IBM 1401-1311 Disk-File Organization Routines (Used also on IBM 1460-1311)
IBM 1440-1311 Disk-File Organization Routines
IBM 1440-1301 Disk-File Organization Routines
IBM 1460-1301 Disk-File Organization Routines.

The following subjects are discussed in this publication.

1. General considerations of disk-file organization.
2. Descriptions of each of the 13 individual object programs.
3. Allowable sizes and formats of input/output files.
4. Program exits and labels useful to user subroutines.
5. Parameter cards used to generate object programs and RDLIN cards used for area definition at object time.
6. Suggested retrieval routines (block diagrams).
7. A complete example of a random file and the programs generated to load and maintain it. (60 pages)

GC24-3195 **Autotest for IBM 4101 and 1460 with IBM 1311: Specifications and Operating Procedures** **37**

Describes the specifications and operating procedures for the IBM 1401-1311 Autotest 8K and the 1401-1311 Autotest 16K programs. Included are sections that define the control cards required, specify the arrangement of cards in the test deck, specify the autopatch card format and autopatching procedures, and describe the operating procedures for testing 1401-1311 Autocoder object programs. (40 pages)

GC24-3209 **2K Report Program Generator Specifications IBM 1401** **28**

The IBM 1401 2K Report Program Generator produces programs that write reports of variable format. This publication explains the writing of report specifications and the preparation of source decks to produce object programs.

The language used for the report specifications is problem-oriented rather than machine-oriented. Therefore, little knowledge of machine-language coding is required. (24 pages)

GC24-3235 **Cobol (on Disk) Specifications IBM 1401, 1440, and 1460** **24**

This reference publication is intended for programmers who have a basic knowledge of *Cobol* programming. It includes the additional specifications necessary to write a *Cobol* program for the IBM 1401, 1440, and 1460 Data Processing Systems with disk storage.

Specific examples show how many *Cobol* statements are coded. A general explanation of these statements is also given. A sample problem shows entries for all divisions. (41 pages)

GC24-3237 **Input/Output Control Program Specifications IBM 1401, 1440, and 1460 with IBM 1285 Optical Reader** **30**

Describes the Input/Output Control Program (IOCP) for IBM 1401, 1440, and 1460 with the IBM 1285 Optical Reader. Included is:

1. A description of the functions of the program
2. The user's requirements in coding routines that use the program
3. Information set up by IOCP for use in processing.

The reader should be familiar with the publication, *IBM 1285 Optical Reader*, GA24-3256, and appropriate Autocoder and Basic Autocoder publications associated with 1401 and 1460. (6 pages)

GC24-3241 **Communications IOCS Specifications IBM 1401, 1440, and 1460 with IBM 1026 and Direct Data Channel** **30**

Provides specifications for IBM 1026 Transmission Control Unit operations in programs assembled with either of two processor programs: 1401/1460 Communications IOCS (1026/DDC), or 1440 Communications IOCS (1026/DDC). It includes additional descriptive entries and macroinstructions, supplementing basic 1401/1460 and 1440 IOCS, that allow any of these three systems to be used with the 1026 and:

1. The IBM 1030, 1050, and 1060 remote terminals connected by local customer-provided communication lines or leased common-carrier lines.
2. The IBM 1050 Data Communication System connected by common-carrier lines, with automatic answering and automatic calling facilities.
3. The IBM 1032 Digital Time Unit.

The minimum machine requirements are specified. User routines are described. A section on programming considerations is included. (32 pages)

GC24-3242 **Cobol (on Disk) Operating Procedures IBM 1401, 1440, and 1460** **24**

Contains the operating procedures for building the *Cobol* system using IBM 1311 Disk Storage, modifying the *Cobol* system, and assembling a machine-language object program from a source program written in the *Cobol* language. A description of the phases that make up the *Cobol* system, a list of halts and messages, and a sample program are included. (62 pages)

GC24-3253 **IBM 1401/1460 or 1440 Operating System Computer Assisted Instruction** **48**

This reference publication describes the IBM Computer Assisted Instruction (CAI) program for the IBM 1401/1460 or 1440 Data Processing Systems. Included is a general description of CAI as an aid in writing and presenting instruction courses through the IBM 1050 Data Communication System. The flexibility of CAI makes it an ideal program for school, industry, military, or any other institution experimenting with advanced teaching techniques. Used experimentally, it can be evaluated by the educator himself for its proper place in the education picture. (30 pages)

GC24-3258 **Autocoder (on Disk) Language Specifications IBM 1401, 1440, and 1460** **22**

Describes the disk Autocoder programming system for IBM 1401, 1440, and 1460. The first section contains the specifications of the symbolic language of Autocoder (mnemonics, labels, address types), a description of declarative, imperative, and assembler control operations, and the rules for writing the source program. The second section describes macro operations and macroinstructions. Reference charts that list all valid Autocoder mnemonics also are included. (56 pages)

GC24-3259 **Autocoder (on Disk) Program Specifications and Operating Procedures IBM 1401, 1440, and 1460** **22**

Contains the program specifications and operating procedures for the Autocoder (on disk) programming system.

The specifications describe the two programs, System Control and Autocoder Assembler, that make up the Autocoder system. Logical files defined and used by the system, control cards, and results of processing operations are also included.

The operating procedures are divided into two sections. The first section describes assembling and executing object programs, changing logical-file assignments, maintaining an Autocoder library, and revising an object program. The second section describes building and updating an Autocoder system.

A summary of control card formats, phase descriptions, and a listing of a sample program make up the appendix of this publication. (65 pages)

GC24-3261 **Report Program Generator (on Disk) Specifications IBM 1401, 1440, and 1460** **28**

This reference publication contains specifications for IBM 1401/1460 report program generator, on disk, and IBM 1440 report program generator, on disk. The publication explains the writing of report specifications and the preparation of control cards, to produce object programs.

Examples and sample programs illustrate the applications of the report program generator language. (116 pages)

GC24-3262 **Basic Autocoder 2K Operating Procedures IBM 1401** **22**

These operating procedures supplement the *Basic Autocoder 2K Specifications for IBM 1401/1460*, GC24-3170. They include procedures to be followed by the operator when assembling and executing a Basic Autocoder 2K program on an IBM 1401 Data Processing System. This publication also includes a general description of the assembly process, instructions for running the object program, and instructions for patching. (16 pages)

GC24-3267 Basic 4K Report Program Generator Operating Procedures IBM 1401 and 1460 28

Contains operating procedures for IBM 1401 and 1460 Basic 4K RPG, and should be used with the SRL publication *Basic 4K Report Program Generator Specifications for IBM 1401 and 1460,* GC24-3166.

It contains these main sections: a description of the Basic 4K RPG deck, the control card, the input deck, operating instructions for generating as well as for running an object program, the edit listing, and halts and messages. (12 pages)

GC24-3273 Multiple Tape Utility Program (Incorporating 120-Character Labels) Specifications and Operating Procedures IBM 1401 and 1460 32

This publication contains the program specifications and operating procedures for the IBM 1401/1460 Multiple Tape Utility Program with 120-Character Label Capability. Included in the specifications is a description of the program, the operations it performs, the user's file requirements (card and tape), and necessary program-control information.

Tape labels are discussed throughout the specifications. A special section for tape labels is also included.

The operating procedures contain a description of the program deck, the procedures for running the program, and the program halts. (15 pages)

GC24-3279 Sort 14 Specifications, IBM 1460 33

This reference publication, which contains a description of the IBM 1460 Sort 14 program, should be used in conjunction with *Input/Output Control System (on Disk) for IBM 1401/1460-1311: Specifications,* GC24-1489.

This publication contains the following information:

1. Minimum machine requirements for an IBM 1460 to be used for Sort 14.
2. Program capabilities.
3. A description of the control cards and RDLIN cards that are required to define the users specific sort program.
4. A description of the phases of the program.
5. The formulas needed to determine the size of program-required areas of disk storage.
6. A description of the facilities provided for inserting user-written routines into the program. (30 pages)

GC24-3289 Sort Operating Procedures IBM 1460 33

This reference publication contains the following information.

1. The minimum machine requirements for an IBM 1460 Data Processing System to be used for Sort 14.
2. A description of the program decks.
3. A description of the procedure to follow when modifying the program decks.
4. The instructions for running a Sort 14 program.
5. The programmed halts and messages that can occur while the program is being run.

(23 pages)

GC24-3298 Input/Output Control System (on Disk) Operating Procedures IBM 1401 and 1460 30

Describes the operating procedures for the IBM 1401 and 1460 IOCS (on disk) program, designed for a 1401 system that includes an IBM 1311 Disk Storage Drive, or a 1460 system that includes an IBM 1301 or 1311 Disk Storage Drive. Use this publication in conjunction with the Systems Reference Library publication *Input/Output Control System (on Disk) for IBM 1401/1460-1311: Specifications,* GC24-1489.

Three main sections are included in this publication: combining IOCS routines with the IBM 1401, 1440 and 1460 Autocoder system; assembling an object program; and running an object program. Because IOCS is actually a set of Autocoder library routines, this publication covers only those functions that are unique to IOCS. The reader should be familiar with the operating procedures described in the Systems Reference Library publication *Autocoder (on Disk) Program Specifications and Operating Procedures: IBM 1401, 1440, and 1460,* GC24-3259. (10 pages)

GC24-3311 Sort 13 and Sort 14 Timing Program Specifications and Operating Procedures IBM 1401 and 1460 33

This reference publication contains the specifications and operating procedures for the Sort 13 and Sort 14 Timing Program. An IBM 1401 or 1460 Data Processing System, with the required machine configuration, can be used to produce Sort 13 timing estimates for disk files to be sorted on any IBM 1440 Data Processing System, and Sort 14 timing estimates for disk files to be sorted on any IBM 1460 Data Processing System.

The first section of this publication contains machine requirements, a description of the program deck, timing considerations, and program information requirements. The second section describes system preparation, messages, and halts.

The user should be familiar with *Sort 14 Specifications, IBM 1460,* GC24-3279 and *Sort 14 Operating Procedures, IBM 1460,* GC24-3289. (24 pages)

GC24-3317 Sort 7 Specifications and Operating Procedures IBM 1401 and 1460 33

This reference publication contains the specifications and operating procedures for the Sort 7 program. The *Specifications* section describes the sorting technique, the tape-loadable and user-program features of the program, file requirements and control cards.

The *Operating Procedures* section contains the instruction for transferring Sort 7 to tape and for executing the Sort 7 program. A description of the Sort 7 program deck, system preparation, and a list of halts and messages are also included.

Schematics of Type A and Type B standard tape labels are given in the *Appendix* to this publication. (56 pages)

GC24-3319 Autocoder (on Tape) Language Specifications and Operating Procedures IBM 1401 and 1460 22

This reference publication contains the language specifications and operating procedures for the Autocoder (on Tape) programming system. The IBM 1401 Autocoder processor program produces machine-language object programs for IBM 1401 and IBM 1460 from source programs written in the symbolic language of Autocoder.

The language specifications are divided into two sections. The first section contains the specifications of the symbolic language (mnemonics, labels, address types, and control operations) and the rules for writing the source program. The second section describes macro operations and macroinstructions.

The operating instructions supplement the language specifications section of this publication. Described are the procedures to be performed by the operator when assembling an Autocoder program on an IBM 1401 or 1460 tape system. The phases of the Autocoder processor are explained and system halts and restarts are given. (60 pages)

GC24-3322 Fortran IV Language Specifications, Program Specifications, and Operating Procedures IBM 1401, 1440, and 1460 25

This reference publication contains the language specifications, program specifications, and operating procedures for the Fortran IV Programming System.

The language specifications describe the Fortran IV language that is processed by the Fortran system. The language closely resembles the language of mathematics, and includes various types of arithmetic, control, input/output, and specification statements.

The program specifications describe the two programs, *System Control* and *Fortran Processor,* that make up the Fortran system. Logical files defined and used by the system, control cards, and results of processing operations are also included.

The operating procedures are divided into two parts. The first part describes compiling and executing object programs, changing logical-file assignments, and maintaining a Fortran library of subprograms. The second part describes building and updating a Fortran system.

A summary of processor jobs, control-card formats, phase descriptions, and a listing of a sample program make up the appendix of this publication. Also included in the appendix is a description of the procedures to be followed in building a system that contains both Fortran and Autocoder. (94 pages)

GC24-3324 Merge 7 Specifications and Operating Procedures IBM 1401 and 1460 33

This reference publication contains the specifications and operating procedures for the Merge 7 program. The *Specifications* section describes the merging technique, file requirements, exits for user programming, and control cards.

The *Operating Procedures* section includes a description of the Merge 7 program deck, deck and system preparation, error options, and a list of halts and messages.

Schematics of Type A and Type B standard tape labels are given in the *Appendix.* (25 pages)

GC24-3325 Communications IOCS Operating Procedures: IBM 1401, 1440, and 1460 with IBM 1026 and Direct Data Channel 30

This publication describes the IOCS (Input/Output Control System) procedures to use when operating an IBM 1401, 1440, or 1460 Data Processing System with a minimum of one and a maximum of four IBM 1026 Transmission Control Units or the Direct Data Channel Feature. When only IBM 1311, 1402, 1403, 1442, 1443, and 1444 input/output files are to be handled, refer to *Input/Output Control System (on Disk) Operating Procedures, IBM 1401 and 1460,* GC24-3298.

The following operations are explained in this publication.

1. Combining IOCS with Autocoder.
2. Generating an object program.
3. Loading the object program.

In addition, this publication lists the minimum machine requirements for each system, and the programmed halts, accompanied by the corrective procedures for each, that can occur during system operation. (16 pages)

GC24-3334 Report Program Generator (on Disk) Operating Procedures IBM 1401 and 1460 28

This reference publication, which contains operating procedures for IBM 1401 and 1460 Report Program Generator (on Disk), should be used in conjunction with:

Report Program Generator (on Disk) Specifications, IBM 1401, 1440, and 1460, GC24-3261.

Autocoder (on Disk) Program Specifications and Operating Procedures, IBM 1401, 1440, and 1460, GC24-3259.

Input/Output Control System (on Disk) Operating Procedures, IBM 1401 and 1460, GC24-3298.

Input/Output Control System (on Disk) for IBM 1401/1460-1311: Specifications, GC24-1489.

This publication contains a description of the RPG program deck, system file preparation, input deck for the RPG run, Autocoder control cards, operating instructions for generating and executing an object program, the edit listing, and halts and messages. (30 pages)

GC24-3341 On-Line Testing IBM 1401, 1440, and 1460 30

This publication presents on-line testing procedures for a communication-oriented IBM 1401, 1440, or 1460 Data Processing System with a remote IBM 1050 Data Communications System and/or IBM 1030 Data Collection System. Use of these procedures reduces the inconvenience caused by malfunctions external to the data processing system and the IBM 1026 or 1448 Transmission Control Unit.

The IOCS options for on-line testing are discussed, and a typical user's diagnostic routine is described. Also, suggestions are given for:

1. Operator testing procedures at the remote terminal;
2. Content of a diagnostic test message; and
3. Types of off-line performance reports.

The reader should be familiar with the following SRL publications, depending on the system he has installed.

IBM 1050 Data Communications System, GA24-3020

IBM 1030 Data Collection System, GA24-3018.

For a data processing system with an IBM 1448:

IBM 1448 Transmission Control Unit, GA24-3010

IOCS Specifications, IBM 1460 with IBM 1448 (1401/1460 Communications IOCS—1448/DDC), GC24-3047

For a data processing system with an IBM 1026:

IBM 1026 Transmission Control Unit, GA24-3244

Communications IOCS Specifications, IBM 1401, 1440, and 1460 with IBM 1026 and Direct Data Channel, GC24-3241. (14 pages)

GC24-3345 IBM 1401/1460 Timing Programs for IBM System/360 Basic Programming Support Sort/Merge Programs (8K Tape) 33

This publication contains the specifications and operating procedures for the IBM 1401 and 1460 timing programs used to estimate the amount of time required to sort records with an IBM System/360 Basic Programming Support 1-channel or 2-channel Sort/Merge Program (8K Tape).

The following information is included in this publication.

1. Minimum machine requirements for estimating times with these programs.
2. A description of the user-prepared information cards required to define the proposed sort operation.
3. The procedure to follow for executing the timing programs.

The user of this publication should be familiar with *IBM System/360 Basic Programming Support Sort/Merge Programs (8K Tape),* GC24-3320.

GC24-3377 IBM 1401/1460 Timing Program for IBM Basic Operating System/360 Sort/Merge Program (8K Disk) 33

Contains the specifications and operating procedures for the IBM 1401 and 1460 timing program used to estimate the amount of time required to sort records with the program IBM Basic Operating System/360 8K Disk Sort/Merge.

The following information is included in this publication.

1. Minimum machine requirements for estimating times with this program;
2. A description of the user-prepared information cards required to define the proposed sort operation;
3. The procedure to follow for executing the timing program.

The user of this publication should be familiar with *IBM Basic Operating System/360 Sort/Merge Program (8K Disk),* GC24-3321.

GC24-3384 IBM 1401/1440/1460-1026 and 1440-1448 Operating Systems Computer Assisted Instruction Author and Proctor Manual 48

Describes the IBM Computer Assisted Instruction program (CAI) for the IBM 1401/1440/1460-1026 and 1440-1448 Data Processing Systems. It describes:

1. The capabilities of the CAI program;
2. The minimum machine requirements for CAI;
3. The operating procedures and related information for the proctor to prepare the systems for CAI;
4. The operating instructions and information for the author and proctor to enter material into the computing system via the IBM 1052 Printer-Keyboard.

GC24-3385 IBM 1401/1440/1460-1026 and 1440-1448 Operating Systems Computer Assisted Instruction Student Manual 48

This publication describes the IBM 1052 Printer-Keyboard as used with the Computer Assisted Instruction Program (CAI). The publication:

1. Contains the information necessary for the student to use the printer-keyboard to receive course material from the computer.
2. Describes the standard features, operation, and cautions that the student must exercise while using the printer-keyboard. (10 pages)

GC24-3439 IBM 1401/1460 Timing Program for IBM System/360 Disk and Tape Operating Systems Tape Sort/Merge Program 33

Contains the specifications and operating procedures for the IBM 1401 and 1460 timing programs used to estimate the amount of time required to sort tape records with the program IBM System/360 Disk Operating System Tape Sort/Merge or the IBM System/360 Tape Operating System Tape Sort/Merge.

The following information is included in this publication.

1. Minimum machine requirements for estimating times with these programs.
2. A description of the user-prepared information cards required to define the proposed sort operation.
3. The procedure to follow for executing the timing programs.

The user of this publication should be familiar with *IBM System/360 Disk and Tape Operating Systems Tape Sort/Merge Program Specifications,* GC24-3438. (16 pages)

GC24-3445 IBM 1401/1460 Timing Program for IBM System/360 Operating System Disk Sort/Merge Program 33

Contains the specifications and operating procedures for the IBM 1401 and 1460 timing program used to estimate the amount of time required to sort records with the program IBM System/360 Disk Operating System Sort/Merge.

The following information is included in this publication.

1. The minimum machine requirements for estimating times with this program.
2. A description of the user-prepared information cards required to define the proposed sort operation.
3. The procedure to follow for executing the timing program.

The user of this publication should be familiar with *IBM System/360 Disk Operating System, Sort/Merge Program Specifications,* GC24-3444. (16 pages)

GF20-0234 Autotest for the IBM 1401: Specifications and Operating Procedures 37

Describes the specifications, features, forms and diagrams required, and operating instructions for using program autotest. This is an advanced testing program for the IBM 1401 to aid in testing Autocoder, SPS, and Fargo programs. Autotest provides the ability to stack programs and to produce automatically, without operator intervention, the necessary documents to evaluate the tested programs. (56 pages)

GF28-8053 Cobol 24

The Common Business Oriented Language (*Cobol*) for programming computers was developed by a committee of the Conference On Data Systems Languages (*Codasyl*) as a cooperative effort of computer users in industry, the Department of Defense and other Federal Government agencies, and computer manufacturers. This manual describes the language specified by *Codasyl* as *Cobol*-1961; that is, the *Cobol* specifications prescribed in the official government manual for 1961.

The *Cobol* language consists of English nouns, verbs, and arithmetic and logical expressions describing business problems. The *Cobol* processor for a given system translates *Cobol* programs into actual machine coding. (172 pages)

GF28-8074 Fortran 25

Fortran is an automatic coding system developed to express problems in a symbolic source language similar to the language of mathematics. This manual describes *Fortran* and prepares the reader to use its facilities. (104 pages)

GF20-8172 Bibliography of Data Processing Techniques 99

This bibliography and associated classification system provides a means to identify selected IBM publications which, either wholly or in part, document data processing *techniques* information. The listing of any given publication in this bibliography, however, does not preclude its appearance in other reference bibliographies.

Part I of this bibliography lists publications by form number within major subject classification. Part II contains abstracts of the publications in form-number sequence only. (12 pages)

GG24-1477 1401 Data Flow 01

Describes each internal 1401 operation, plus card input/output and printer operations, to assist operators, programmers, and systems engineers in understanding 1401 operations. Presents each operation in the form of a data-flow diagram. Shows graphically the path data takes during an operation, along with a written explanation of the steps involved. (64 pages)

GH20-0507 Bibliography of Application Publications Finance Industries 99

This bibliography and the associated classification system lists and categorizes IBM application publications that are pertinent to finance industries. Section I lists these publications by application or industry. Section II contains an abstract of each publication in order number sequence.

A periodic newsletter (GN20-1077) is published to keep the bibliography up to date. The newsletter is divided into two sections. Section I is an updated listing of application publications by application or industry. This section also includes any corrections to the bibliography and a list of superseded publications. Section II contains an abstract of each publication not included in the last published bibliography. (26 pages)

GH20-0522 Bibliography of Application Publications Distribution Industries 99

This bibliography and the associated classification system lists and categorizes IBM application publications that are pertinent to distribution industries. Section I lists these publications by application or industry. Section II contains an abstract of each publication in order number sequence.

A periodic newsletter (GN20-1853) is published to keep the bibliography up to date. The newsletter is divided into two sections. Section I is an updated listing of application publications by application or industry. This section also includes any corrections to the bibliography and a list of superseded publications. Section II contains an abstract of each publication not included in the last published bibliography. (26 pages)

GH20-0530 Bibliography of Application Publications Public Utility Industries 99

This bibliography and the associated classification system lists and categorizes IBM application publications that are pertinent to public utility industries. Section I lists these publications by application or industry. Section II contains an abstract of each publication in order number sequence.

A periodic newsletter (GN20-1866) is published to keep the bibliography up to date. The newsletter is divided into two sections. Section I is an updated listing of application publications by application or industry. This section also includes any corrections to the bibliography and a list of superseded publications. Section II contains an abstract of each publication not included in the last published bibliography. (14 pages)

GH20-0531 Bibliography of Application Publications Printing and Publishing Industries 99

This bibliography and the associated classification system lists and categorizes IBM application publications that are pertinent to printing and publishing industries. Section I lists these publications by application or industry. Section II contains an abstract of each publication in order number sequence.

A periodic newsletter (GN20-1867) is published to keep the bibliography up to date. The newsletter is divided into two sections. Section I as an updated listing of application publications by application or industry. This section also includes any corrections to the bibliography and a list of superseded publications. Section II contains an abstract of each publication not included in the last published bibliography. (12 pages)

GH20-0536 Bibliography of Application Publications Insurance Industry 99

This bibliography and the associated classification systems lists and categorizes IBM application publications that are pertinent to the insurance industry. Section I lists these publications by application or industry. Section II contains an abstract of each publication in order number sequence.

A periodic newsletter (GN20-1869) is published to keep the bibliography up to date. The newsletter is divided into two sections. Section I is an updated listing of application publications by application or industry. This section also includes any corrections to the bibliography and a list of superseded publications. Section II contains an abstract of each publication not included in the last published bibliography. (22 pages)

GJ22-6690 Standard BCD Interchange Code 01

Describes the standard BCD interchange code. Discusses the IBM card code, IBM BCD magnetic tape code, correspondence between codes and printed symbols, correspondence between codes and machine controls, collating sequence of code elements, and two subsets of alternate graphics. (4 pages)

GJ24-0209 Programs for IBM 1401 Card Systems: Specifications 32

Describes five IBM 1401 utility programs, five frequently used subroutines, and four program error-detection aid routines for use in program testing on 1401 systems using card input and card or printed output. Each program is easily adapted to the user's program. Flexibility of the programs provides using either 100 or 132 positions of printing where applicable, and for adapting the programs to 1401 systems with 1400, 2000, or 4000 positions of core storage. (36 pages)

GJ24-0215 Report Program Generator for IBM 1401 Card and Tape Systems 28

Presents a description of writing the report specifications and preparing a source deck for the report program generator.

The report program generator (RPG) produces programs for writing reports of variable format. When using this program, the user need only supply a set of specifications for the report. Because the language for the specifications is problem-oriented rather than machine-oriented, little knowledge of machine-language coding is required. Specifications of the desired report, after being punched into cards, are used as input to the RPG. The generator then produces a program to write the desired report, using the input data from the user's card or magnetic tape file. The report programs that are generated can include such features as: various classes of headings and totals, input data selection, report format control, arithmetic operations including multiplication and division, half-adjusting and position adjusting, and user's subroutines. The output of report programs generated can be printed, punched in cards, or written on magnetic tape. (76 pages)

GJ24-1411 Utility Programs for IBM 1401 Tape Systems: Specifications 32

Describes three utility programs that facilitate translating data: card-to-tape, tape-to-card, and tape-to-printer. These programs enable 1401 tape systems to perform operations now done off-line by 700 and 7000 series auxiliary equipment. Minimum machine requirements are the 1401 Model C3 and the high-low-equal compare feature. To process binary tape records or column-binary cards requires also the column binary feature. (36 pages)

GJ24-1422 1401 Sort 1 Specifications 33

Presents specifications for Sort 1, a generalized sorting program for use on an IBM 1401 Data Processing System equipped with a minimum of four IBM 729 II, 729 IV, or 7330 Magnetic Tape Units. The program can modify itself according to information punched in a control card and thus perform a variety of sorting applications. This bulletin also provides information for preparing control cards and estimating the timing of sorting applications. (12 pages)

GJ24-1428 Multiple Utility Programs for IBM 1401 Tape Systems: Specifications 32

Presents the multiple utility program for IBM 1401 tape systems, which performs concurrently three off-line utility operations: card-to-tape, tape-to-card, and tape-to-printer. This program can accommodate, within limitations, magnetic tapes and card decks prepared on any IBM system.

The program requires an IBM 1401 Model C3 tape system, and the high-low-equal compare and advanced programming special features. To process binary tape-records or column-binary cards requires also the column binary feature. (4 pages)

GJ24-1463 1401-1009 Utility Program: Preliminary Specifications 32

Presents preliminary specifications of a utility program for operating a 1401-1009 system with a minimum of programming effort. Describes the functional characteristics and the operational control of the program. Gives the minimum machine requirements of one transmission terminal using the program, and lists the various configurations of equipment with which this terminal can communicate.

This 1401 program provides transmit and receive control of the IBM 1009 Data Transmission Unit by six manually-controlled sense switches on the 1401. A 1401-1009 system under control of this program can perform card-to-card, card-to-tape, tape-to-card and tape-to-tape transmissions with various 1401-1009 configurations, or an IBM 7701 Terminal Unit. (8 pages)

GJ24-1467 Report Program Generator for IBM RAMAC 1401 Systems: Specifications 28

Explains the writing of report specifications, defines the disk input file, describes the preparation of the control card, and gives the minimum system requirements for generating and for executing the object programs.

The report program generator for IBM RAMAC 1401 systems produces object programs that write reports of variable format. The data files to be processed must be contained in the IBM 1405 Disk Storage unit. Because the language used for the report specifications is problem-oriented rather than machine-oriented, little knowledge of machine-language coding is required. (16 pages)

GJ24-1485 1401-1012 Tape Punch Routines 32

Describes the program routines for punching 5- and 8-track tape on the IBM 1012 Tape Punch. Includes sections on general operation, tape checking and corrections, end-of-reel processing, diagnostic halts, and operating procedures. The routines, as written, are to be incorporated into an Autocoder system library. Two main instructions cause the 1401 Autocoder to generate the necessary instructions. (4 pages)

GJ28-0238 1401 Peripheral Integrated Processing System for Use with 7000 Series Data Processing Systems 48

Describes the IBM 1401 peripheral integrated processing system. This system includes among its supervised peripheral programs the D-programs of the 7000 and 1400 output editing system. (28 pages)

GL24-3102 Modified Character Sets for the IBM 1403 Print Chains and Print Trains 13

Contains a complete explanation of four modified-character-set IBM 1403 print chains or trains, available on an RPQ (Request for Price Quotation) basis for the IBM 1403 Printer Models 1, 2, and 3. The physical characteristics, BCD codes, card codes, IBM 1401 and 1460 programming considerations, printing speed, and synonym codes are discussed fully for these four print chains: 60-character set (optional format), 80-character set (set format), 80-character set (optional format), and 120-character set (optional format).

This publication also covers the ordering procedures for the four print chains or trains and the prerequisite RPG items.

For a list of related publications and abstracts, see the IBM Bibliography for the associated Data Processing System. (16 pages)

GR20-9000 1401 Basic Programming Course Description 90

NOTE: Each course description booklet describes the course, its objectives and length, the intended audience, the prerequisites, and the course code. It lists all materials required by the instructor and by the student. Abstracts are included for educational materials created specifically for the course. Also, abstract references are provided for the other materials.

GR20-9001 1401 Accelerated Basic Programming Course Description 90

GR20-9010 1401 Console Operator — Course Description 90

GR20-9012 1401 Fargo Course Description 90

GR20-9013 1401 System Planning Course Description 90

GR20-9029 1401 Advanced Training Course Description 90

GR20-9030 1401 Autotest Course Description 90

GR20-9031 1401 Installation Planning Course Description 90

GR20-9032 1401 Programming System Course Description 90

GR20-9033 1401 RPG Course Description 90

GR20-9034 1401-1311 Disk Storage Programming Course Description 90

GR20-9054 1401 Basic SPS Programmed Instruction Course Description 90

GR20-9055 1401 Basic Programming Autocoder, Programmed Instruction Course Description 90

GR20-9062 7740 Communication Control Package Course Description 90

GX20-1702 Proportional Record Layout and Format Form 80

The front side of this form consists of the Proportional Record Layout form. It is suitable for card, tape, and disk records. Positional markings are 00-99 and 01-100.

The back side of the form is the Record Format form. This form permits record layouts to be prepared without the space limitations of positional markings. Space is also provided for reference data. These forms are general-purpose and may be used for all systems. (25 sheets per pad—11 x 16½)

GX20-1776 Printer Spacing Chart (144 Position Span at 10 Characters per Inch, and 6 Lines per Vertical Inch) 80

This chart is printed in light green ink and provides 144 printing positions (at 10 positions per inch horizontally) for a printer carriage space-setting of 6 lines per inch. The form essentially follows the layout recommended by the SHARE organization. This chart may be reproduced using most standard office copying machines. When the form is to be used as reproduction copy for printing documents and the grid and other preprinted information are to be dropped-out, the printer should be instructed to use a green filter.

Black pen ink or typewritten insertions are recommended. (25 sheets per pad—11 x 18)

GX20-1778 Printer Spacing Chart (144 Position Span at 10 Characters per Inch, and 8 Lines per Vertical Inch) 80

This chart is printed in green ink and provides 144 printing positions (at 10 positions per inch horizontally) for a printer carriage space-setting of 8 lines per inch. The format essentially follows the layout recommended by the SHARE organization. This chart may be reproduced using most standard office copying machines. When the form is to be used as reproduction copy for printing documents and the grid and other preprinted information are to be dropped-out, the printer should be instructed to use a green filter.

Black pen ink or typewriter insertions are recommended. (25 sheets per pad—11 x 18)

GX20-8010 Installation Planning Schedule 80

This form is for preparing installation planning schedules. Provision is made for entering the planned activities, programs, or functions on the left side, and scheduled dates or time periods on the top of the form. (25 sheets per pad—16½ x 11)

GX20-8011 Scheduling Control Form — Programming Progress Chart 80

This form is a chart for entering scheduled and completion dates for each phase of programming and testing. The reverse side contains a weekly progress chart. (25 sheets per pad—16½ x 11)

GX20-8020 Flowcharting Template 80

This template provides a convenient means for drawing standard symbols used frequently in flowcharting computer programs.

GX20-8021 Autochart Flowchart Work Sheet 80

This work sheet is used for rough layout of flowcharts prior to coding in the IBM AUTOCHART language. (25 sheets per pad—16½ x 11)

GX20-8024 Decision Logic Coding Form 80

This form is a design logic coding aid for users of the IBM 1401 Design Logic Translator Program.

GX20-8040 1230, 1231, 1232 Spacing Chart (Test Scoring) 5 Words per Inch 80

Used to lay out test scoring forms using 5 words per inch for the 1230, 1231, and 1232. (25 sheets per pad—12 x 17)

GX20-8041 1230, 1231, 1232 Spacing Chart (Test Scoring) 4 Words per Inch 80

Used to lay out test scoring forms using 4 words per inch for the 1230, 1231, and 1232. (25 sheets per pad—12 x 17)

GX20-8042 1230, 1231, 1232 Spacing Chart (Test Scoring) 3 Words per Inch 80

Used to lay out test scoring forms using 3 words per inch for the 1230, 1231, and 1232. (25 sheets per pad—12 x 17)

GX20-8043 1230, 1231, 1232 Spacing Chart (Non Test Scoring) 5 Words per Inch 80

Used to lay out non test scoring forms using 5 words per inch for the 1230, 1231, and 1232. (25 sheets per pad—12 x 17)

GX20-8044 1230, 1231, 1232 Spacing Chart (Non Test Scoring) 4 Words per Inch 80

Used to lay out non test scoring forms using 4 words per inch for the 1230, 1231, and 1232. (25 sheets per pad—12 x 17)

GX20-8045 1230, 1231, 1232 Spacing Chart (Non Test Scoring) 3 Words per Inch 80

Used to lay out non test scoring forms using 3 words per inch for the 1230, 1231, and 1232. (25 sheets per pad—12 x 17)

GX20-8096 General Purpose Card Punching Form 80

A general purpose form for preparing input data, control cards, program patch cards and other card input to IBM equipment. (25 sheets per pad—8½ x 11)

GX21-9021 Reference Card IBM 1230, 1231, 1232 Document Marking Instructions 85

This reference card provides, in simple illustrated form, the basic information needed to produce a properly marked document. Marks read from the documents by IBM optical mark readers can be:

1. Transmitted to a data processing system,
2. Scored, as for student test, or
3. Punched into cards for later processing.

It is, therefore, very important that the documents are marked correctly and with care. (Card—7¼ x 3⅛)

GX22-6795 7740 Communication Control System Templates 80

Contains scaled equipment templates on acetate sheets (¼ inch equals 1 inch), for planning machine-room layouts. The units are the IBM 1311 Disk Storage, 7904, 7907, 7908, 7909 Data Channels, 7741 Processing Unit, 1051 Control Unit, 1052 Printer-Keyboard, and 1056 Card Reader. (Template—8½ x 11)

GX24-1152 1401 Symbolic Programming System Coding Sheet 80

This coding form aids in programming the IBM 1401 using the symbolic programming system. Provides space for all information relevant to the coding and subsequent assembly of the object program. Prenumbered lines sequence each entry. Fields are numbered and ruled to facilitate both programming and card punching. (The cards corresponding to this form can be ordered under Electrotype No. C55369.) (25 sheets per pad—11 x 8½)

GX24-1336 1401 and 1410 Report Program Generator, Input Specifications 80

This is one of four Report Program Generator (RPG) specifications forms. The four forms apply for card, IBM 1405 Disk Storage, and magnetic-tape applications of RPG for both the IBM 1401 and the 1410. On this form (input specifications), the user describes his input file from which the report is to be prepared. (The input-specifications cards corresponding to this form can be ordered under Electrotype No. N12836.) (25 sheets per pad—11 x 8½)

GX24-1337 1401 and 1410 Report Program Generator, Data Specifications 80

This is one of four Report Program Generator (RPG) specifications forms. The four forms apply for card, IBM 1405 Disk Storage, and magnetic-tape applications of RPG for both the IBM 1401 and the 1410. On this form, the user describes the data fields that appear in the output and those used in processing. (The data-specifications cards corresponding to this form can be ordered under Electrotype No. N12837.) (25 sheets per pad—11 x 8½)

GX24-1338 1401 and 1410 Report Program Generator, Calculation Specifications 80

This is one of four Report Program Generator (RPG) specifications forms. The four forms apply for card, IBM 1405 Disk Storage, and magnetic-tape applications of RPG for both the IBM 1401 and the 1410. The user can specify on this form calculations that are more extensive than those that can be defined on the data specifications sheet. Some examples are comparison, multiplication, and division, as well as subsequent computations using the results from data specifications and prior entries on the calculation sheet. (The calculation-specifications card corresponding to this form can be ordered under Electrotype No. N12835.) (25 sheets per pad—11 x 8½)

GX24-1339 1401 and 1410 Report Program Generator, Format Specifications 80

This is one of four Report Program Generator (RPG) specification forms. The four forms apply for card, IBM 1405 Disk Storage, and magnetic-tape applications of RPG for both the IBM 1401 and the 1410. On this form the user describes the lines and the fields constituting the output. (The format-specification cards corresponding to this form can be ordered under Electrotype No. N12834.) (25 sheets per pad—11 x 8½)

GX24-1350 1401, 1410, and 1440 Autocoder Coding Sheet 80

This coding sheet is designed for use in programming the IBM 1401 using 1401 Autocoder, the IBM 1410 using 1410 Autocoder or Basic Autocoder, and the IBM 1440 using 1440 Autocoder. The columns and lines of the sheet are numbered to facilitate both programming and card punching. (Autocoder source-input cards corresponding to this form can be ordered under Electrotype No. A36199. Autocoder condensed-output cards can be ordered under Electrotype No. C59503.) (50 sheets per pad—11 x 8½)

GX24-1709 1401 RPG Program Reference Card 85

This reference card presents the report specification parameters and the control card to assist users of the IBM 1401 Report Program Generator (1401 RPG) in preparing the input, data, calculation, and format report specifications (GX24-1336 to GX24-1339, inclusive). The entries acceptable to 1401 RPG, as well as a brief explanation of them, are included, together with the 1401 RPG control-card contents and format. (Card—15¼ x 8½)

GX24-3039 1418 and 1428 Optical Readers Document Design and PDS Timing Chart 80

This chart is an aid for designing documents to be read by the 1418 or 1428 optical reader.

The full-size drawing of the transport path shows exact location of read stations and photo document sensors. Moving a document across this chart simulates actual operation. (25 sheets per pad—22 x 11)

GX24-3100 1440/1460 Console Status Sheet 80

This sheet is a representation of the IBM 1447 Console. It aids in preparing the 1440 or 1460 for operation and in testing programs. The status of console lights, registers, and switches can be recorded. (25 sheets per pad—8½ x 11)

GX24-3140 IBM 1460 Physical Planning Template 80

This template provides a ¼" = 1 foot scale drawing of units for the 1460 system and is to be used for the floor planning of an installation. (clear plastic sheet—8½ x 11)

GX24-3245 Control Card Formats for Sort 2, Merge 2, Sort 4, Sort 7, and Merge 7 with 1401/1460 80

This form is designed to assist the user in preparing control cards and documentation for 1401 and 1460 tape-sorting and tape-merging programs. For each of the five control-card formats, a brief description of the information to be specified is provided. To the left of each description are column numbers and spaces in which to write the information to be punched. (25 sheets per pad—17½ x 11)

GX24-3448 IBM 1445 Printer Spacing Chart 80

This chart, scaled in nonphotographic blue, provides 113 printing positions at 8 characters per inch for carriage spacing of 6 lines per inch. Vertical rulings are shown for each inch, or every 8 characters apart, to assist in printing layout. A carriage-control tape facilitates planning for tape punching. Space is available on the top of the form to indicate miscellaneous print line formats. (25 sheets per pad—11 x 16½)

GX24-6437 1240, 1401, 1440, and 1460 Program Chart 80

This form is a program planning chart with columns provided for step number, instruction address, machine instruction, remarks and effective number of characters in instruction and data. (25 sheets per pad—8½ x 11)

GX24-6438 1240, 1401, 1410, 1440, and 1460 Storage Layout 80

This sheet provides storage positions for assigning data, symbolic notations, and wordmarks. The chart is arranged in ten rows of 100 positions each, with space provided in the upper left corner of each row to enter the hundred's address.

The reverse side contains a pre-numbered schematic for allocating 2000 positions of storage. Pre-assigned standard input/output storage areas are indicated by light shading. Pre-assigned output print area for the expanded-print feature, and the read-in area for the IBM 1404 read-compare feature are indicated by dark shading. (25 sheets per pad—16½ x 11)

GX24-6482 1401 Physical Planning Template 80

Contains equipment templates printed on acetate sheets (scale: ¼" = 1') for planning machine-room layouts for the 1401 system. (clear plastic sheets—8½ x 11)

GX24-6556 Fargo Report Specifications, Phases 4 and 1 80

This is one of four forms used with *Fargo*. The programmer uses this form to record report specifications to be punched in report and field-headings control cards (phase 4) and in master report and control-break control cards (phase 1). (25 sheets per pad—11 x 8½)

GX24-6557 Fargo Report Specifications, Phase 1 80

This is one of four forms used with *Fargo*. The programmer uses this form to record report specifications to be punched in constants control cards (phase 1). (25 sheets per pad—11 x 8½)

GX24-6558 Fargo Report Specifications, Phase 2 80

This is one of four forms used with *Fargo*. The programmer uses this form to record report specifications to be punched in total control cards (phase 2). (25 sheets per pad—11 x 8½)

GX24-6559 Fargo Report Specifications, Phase 3 80

This is one of four forms used with *Fargo*. The programmer uses this form to record report specifications to be punched in detail control cards (phase 3). (25 sheets per pad—11 x 8½)

GX24-6562 1401 Timing Estimate Sheet 80

This form facilitates job timing, and can show timing justifications for 1401 sales proposals. (25 sheets per pad—11 x 8½)

GX24-6568 1401, 1410, 1440, and 1460 Library Coding Form 80

This form is used in coding library routines for the IBM 1401, 1410, and 1440 Autocoder macroinstructions. Space is provided for information that must be included in the library entries. Fields are numbered and ruled to facilitate coding and card punching. (25 sheets per pad—11 x 8½)

GX24-6587 1401 Console Sheet 80

This sheet is a representation of the IBM 1401 Processing Unit console. The form can aid in preparing the 1401 system for operation or for indicating the status of console lights, registers, and switches when program testing. (25 sheets per pad—8½ x 11)

GX24-6588 Operating Instruction Sheet IBM 1401, 1440, and 1460 80

This form can be used as a guide for preparing the system for a program run. The form has areas for indicating: input and output files from card, disk or tape, switch settings, program halts, and forms to be used with the punch and printer. (25 sheets per pad—8½ x 11)

GX24-6591 Report Program Generator: Data Specifications IBM 1401, 1440, 1460 80

This is one of four forms provided for use in connection with the Report Program Generator for the IBM 1401 and 1460. The forms of this set are numbered GX24-6591 through GX24-6593. (25 sheets per pad—11 x 8½)

GX28-1464 Cobol Program Sheet 80

This sheet aids the programmer in writing the entries of a *Cobol* source program. The sheet is designed according to the principles governing the *Cobol* reference format (see *Cobol*, GF28-8053). The form provides for recording the entries for the four divisions of a *Cobol* program: identification, environments, data, and procedure. (*Cobol* source-program cards corresponding to this form can be ordered under Electrotype No. C61897.) (25 sheets per pad—11 x 8½)

GX28-1520 Cobol Reference Card 85

This card provides a convenient reference to material frequently used by the *Cobol* programmer. Included are a *Cobol* word list, basic *Cobol* formats, and the following tables:

Special characters used in *Cobol*
Arithmetic expressions—sequence of symbols
Conditional expressions—sequence of symbols
Arithmetic operators
Relational operators
Data-items pictorial characters.

(folded card—7⅜ x 3¼)

GX28-1585 1401 Autotest Autocoder Control Card and Patch Card Coding Sheet 80

This is one of three forms used with the 1401 autotest program. This form facilitates Autocoder coding and card punching of Autocoder program control, tape control and patch cards. (Patch cards corresponding to this form can be ordered under Electrotype No. L18557; and program and tape-control cards, under Electrotype No. L18558.) (25 sheets per pad—13½ x 9½)

GX28-1586 1401 Autotest Tape and RAMAC File Generation Data Sheet 80

This is one of three forms used with the 1401 autotest program. This form facilitates coding and card punching of file-generation control and data cards for tape and RAMAC files. (25 sheets per pad—13½ x 9½)

GX28-7327 Fortran Coding Form 80

This form is used when programming in the *Fortran* language. Columns and lines are ruled and numbered to facilitate both programming and card punching. (Cards corresponding to this form can be ordered under Electrotype No. 888157.) (50 sheets per pad—11 x 8½)

GX22-6795 7740 Communication Control System Templates 80

Contains scaled equipment templates on acetate sheets (¼ inch equals 1 inch), for planning machine-room layouts. The units are the IBM 1311 Disk Storage, 7904, 7907, 7908, 7909 Data Channels, 7741 Processing Unit, 1051 Control Unit, 1052 Printer-Keyboard, and 1056 Card Reader. (Template—8½ x 11)

GX28-8147 7740 Assembly Program Coding Form 80

This form is for coding 7740 source-program statements that are assembled by the 7740 assembly program, which uses the IBM 1401. (25 sheets per pad—8½ x 11)

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