

HARDWARE PUBLICATION BIBLIOGRAPHY

Pub Number	Revision	Description
CCW0114000		The CRAY X-MP EA/464 Chassis Map (S/N 1101 and 1102) identifies modules by number and name and shows the physical location of each CRAY X-MP EA module. This chassis map is for CRI employees who need specific chassis layout information.
CCW-0115-000		The CRAY X-MP/14se Chassis Map shows the physical location of the CRAY X-MP/14se modules and the physical location of the IOS within the mainframe chassis. This chassis map is for CRI field engineers and system test personnel.
CCW-0118-000		The CRAY X-MP EA/464 Chassis Map (S/N 1103 and up) identifies modules by number and name and shows the physical location of each CRAY X-MP EA module. This chassis map is for CRI employees who need specific chassis layout information.
CCW-0121-000		The CRAY X-MP EA/116se Chassis Map. This chassis map identifies CRAY X-MP EA/116se modules by number and name and shows the physical location of each. This chassis map is for CRI employees who need specific chassis layout information for the CRAY X-MP EA/116se system.
CCW-0122-000		The CRAY X-MP EA/264 Chassis Map. This chassis map identifies CRAY X-MP EA/264 modules by number and name and shows the physical location of each. This chassis map is for CRI employees who need specific chassis layout information for the CRAY X-MP EA/264 system.
CCW-0412-0A0		CRAY Y-MP 2E Computer System Chassis Map. This chassis map identifies CRAY Y-MP 2E modules by number and name and shows the physical location of each. This chassis map is for CRI employees who need specific chassis layout information for the CRAY Y-MP 2E computer system.
CCW-0419-000		CRAY Y-MP 8I Computer System Chassis Map. This chassis map identifies CRAY Y-MP 8I modules by number and name and shows the physical location of each. This chassis map is for CRI employees who need specific chassis layout information for the CRAY Y-MP 8I computer system.
CCW-0420-000		CRAY Y-MP 4E Computer System Chassis

Map. This chassis map identifies CRAY Y-MP 4E modules by number and name and shows the physical location of each. This chassis map is for CRI employees who need specific chassis layout information for the CRAY Y-MP 4E computer system.

CCW-0422-000 CRAY Y-MP 8E Computer System Chassis Map. This chassis map identifies CRAY Y-MP 8E modules by number and name and shows the physical location of each. This chassis map is for CRI employees who need specific chassis layout information for the CRAY Y-MP 8E computer system.

CCW-1027-000 SSD-E 900 Series Cabinet Chassis Map. This chassis map identifies the SSD-E 900 series cabinet modules by number and name and shows the physical location of each. This chassis map is for CRI employees who need specific chassis layout information for the SSD-E 900 series cabinet.

CCW1004000 The SSD Model C Chassis Map shows the physical location of SSD model C modules. This chassis map is written for CRI field engineers and systems test personnel.

CCW1005000 The SSD Solid-state Storage Device Model D Chassis Map shows the physical location of SSD model D modules. This chassis map is written for CRI field engineers and systems test personnel.

CCW-1006-000 IOS Model C Chassis Map. Shows each module by name, number, and physical location. This chassis map is for CRI employees who need specific chassis layout information for the IOS Model C.

CCW-1007-000 The IOS Model D/Integrated SSD Chassis Map shows the physical location of the IOS Model D and the integrated SSD modules. This chassis map is written for CRI field engineers and systems test personnel.

CDM-0002-000 The CRAY-1 Computer Systems MCU-based Diagnostic Reference Manual describes the diagnostic maintenance tools that run and monitor diagnostic tests on CRAY-1 models A, B, C, or S series computer systems using the Data General Eclipse as a maintenance control unit (MCU). This manual is written for CRI field engineers and provides information on operation, installation, and software maintenance, including appendices with brief descriptions of diagnostic monitors, Cray CPU foreign interfaces, Eclipse diagnostic tests, and command buffers.

CDM-0003-000 The CRAY-1 Computer System A, S, and M IOS-based Diagnostic Reference Manual supports the off-line diagnostic release S2.0 for CRAY-1 computer system models A, S, and M (IOS). This manual is written for CRI field engineers and provides information on the off-line tests that operate under the stand-alone operating system. The operating system includes the diagnostic support system (DSS) and the Cray maintenance operating system (CMOS).

CDM-0005-0A0 DONUT User Guide. The DONUT User Guide provides procedures for running DONUT under UNICOS 5.1.7 on DD-39, DD-40, and DD-49 disk drives and on the removable disk subsystem (RDS-5). Instructions describing how to upgrade DONUT from the UNICOS 5.0 to the UNICOS 5.1.7 version are included. Procedures describe how to verify disk drive operation, verify a suspected flaw, add a flaw using the autoflaw option, and offload data and manually add a flaw. This guide also describes flaw tables, flaw management, and DONUT main menus and options. Additions with revision A include: new DONUT mods, IOS Striping and Sector Flawing subsections, a caution regarding the use of fsoffload, and minor technical corrections. Change bars are added to indicate all new or changed information.

CDM-0108-000 The CRAY X-MP IOS-based Diagnostic Reference Manual supports the off-line diagnostic release X3.1 and P1.1. The maintenance tools described operate on CRAY X-MP systems using the IOS to run and monitor diagnostic tests. Part 1 describes the commands and capabilities of the CRAY X-MP computer systems diagnostic maintenance tools (operating systems, boots, monitors, and disk routines.) Part 2 describes the steps to assemble or modify diagnostic tests onsite. This manual is written for CRI field engineers.

CDM-0108-001 The CRAY X-MP IOS-based Diagnostic Reference Manual change packet adds information concerning the maintenance workstation (MWS) addition to the CRAY X-MP computer system. The MWS provides new off-line diagnostic programs and a new operating system, the Cray maintenance system (CMS).

CDM-0201-0A0 A The CRAY-2 Computer Systems Off-line Diagnostic Reference Manual describes the maintenance tools that operate on the CRAY-2 computer system and is written for CRI field engineers. This manual describes off-line diagnostic tests that control the maintenance control console (MCC) and either the BART, DAVE, or FRED monitors. This manual also describes the CIATEST, FGUT, and FIMT stand-alone, off-line diagnostic tests. Revision A supports

the off-line diagnostic release C2.1 for CRAY-2 computer systems. Section 3, FOREGROUND GROUND-UP TEST (FGUT) is revised to include FGUT's five modes of operation. Change bars and screen displays are added to the entire manual. All previous printings are obsolete.

CDM-0201-0A1 A1 CRAY-2 Computer Systems Off-line Diagnostic Reference Manual Change Packet. This manual describes the maintenance tools that operate on the CRAY-2 computer system. This manual is written for CRI field engineers. This manual describes off-line diagnostic tests that run control of the maintenance control console (MCC) and either the BART, DAVE, or FRED monitors. This manual also describes the CIATEST, FGUT, and FIMT stand-alone, off-line diagnostic tests. The change packet supports the off-line diagnostic release C2.2 for CRAY-2 computer systems. The diagnostic test names CIATEST and FIMT have been changed to CIA and FIM respectively. A listing of the existing FGUT packets for the CRAY-2 computer system and new software internals for the DD-40 and the high-speed external (HSX) communications channel have been added. Also, an appendix has been added to include a new MCU-based FP diagnostic program, the CRAY-2 system clear utility (CSC). The index has been updated to reflect these changes.

CDM-0414-000 CRAY Y-MP and X-MP EA Simulator User Guide. The CRAY Y-MP and X-MP EA Simulator User Guide explains YSIM, an instruction-level simulator for the CRAY Y-MP, X-MP EA, and CRAY X-MP EA/lse computer systems. The YSIM versions documented in this manual run on the Motorola maintenance workstation (MWS) and the Sun maintenance workstation model E (MWS-E). YSIM in this manual corresponds with the Y1.2 diagnostic release and is set up to work with the 2.0 version of CFG, the MWS system configuration utility. This manual is written for field engineers and Hardware Training students and combines theory, tools (commands), and procedures. This manual documents what the simulator YSIM is, what it can be used for, how to simulate hardware faults, what bugs are currently available to practice with, what diagnostics run on the simulator, and how to use the CRAY Y-MP and X-MP EA code debugger (YDB), a tool supplied with YSIM that gives you control of the simulator.

CDM-0433-000 CRAY Y-MP EL Offline Diagnostic User Guide. This guide provides a tutorial and detailed descriptions of environments 0, 1, and 2 within the mainframe maintenance environment (MME). Other information includes a quick-reference list of the diagnostics that can run within MME, a list of the command buffer commands, and detailed descriptions of the stand-alone, IOS-based tests.

CDM-0702-000 CRAY XMS Offline Diagnostic Reference Manual. The CRAY XMS Offline Diagnostic Reference Manual contains information on the CRAY XMS diagnostic set; the set consists of IOS kernel (Genesis) commands, level 0 tests, monitors, level 1 tests, utilities, remote access, and RTscope. This manual is written for support service personnel and supports the offline diagnostic release XMS1.0.

CDM-1018-0A0 IOS Model E Offline Diagnostic Reference Manual. This revision incorporates changes to the IOS model E diagnostic set implemented in the ME1.1 diagnostic release. This revision adds new DMS commands, a new DMS and YIMS shell environment variable, enhanced DMS diagnostic descriptions, a new DME drive troubleshooting utility description, and new test and utility descriptions. This revision updates the DME menu maintenance utility, YIMS commands, several test descriptions, and Section 1 organization. Section 10, "Displaying and Printing Diagnostic Listings," was removed. This information is now located in the CRAY Y-MP and CRAY X-MP EA Maintenance Workstation User Guide and in the MWS-E User Guide.

CDM-1018-0A1 IOS Model E Offline Diagnostic Reference Manual Change Packet. This change packet adds DD-62 disk drive support to the device maintenance environment (DME) program documentation in Section 4. This change packet supports the ME1.1.1 diagnostic release.

CDM-1019-000 SSD-E Maintenance System User Guide. This user guide provides information about the SSD-E Maintenance System (SSDE), which is a diagnostic environment used to troubleshoot the SSD-E. Sections provide a detailed tutorial on how to use the various regions and windows within SSDE, detailed descriptions of the various SSDE tests, and troubleshooting information about using SSDE.

CDM-1020-0A0 Disk Drive Offload User Guide (Version 1.0). This guide is a comprehensive document describing version 1.0 of the disk drive offload utility (ddoffload). This guide describes how to build and install ddoffload files from tape, the system requirements for using ddoffload, and ddoffload procedures for DD-40/41/4R disk drives on CRAY X-MP and CRAY Y-MP computer systems with an IOS model B, C, or D running UNICOS 5.1.7 through 6.0.x. A disk drive maintenance strategy section will help guide the user in deciding when to use ddoffload. Refer to publication number CDM-1028-000 for information on the ddoffload release 2.0 program.

CDM-1028-000 Disk Drive Offload User Guide (Version 2.0). This guide is a comprehensive document describing version 2.0 of the disk drive offload utility (ddoffload). An overview of the ddoffload software, requirements for using ddoffload, and ddoffload procedures for DD-40/41/42/4R drives on UNICOS 6.1 through 7.0 systems are also included. This guide also describes the configuration move (cm) utility, which is used to offload data from any single HDA or spindle type device. Procedures for using the cm utility on DD-60 series drives are included.

CDM-1114-0A0 DS-40/41 Disk Subsystem Diagnostic Reference Manual. The DS-40/41 Disk Subsystem Diagnostic Reference Manual, describes the Cray Research, Inc. maintenance control unit (MCU), I/O subsystem (IOS), and CRAY-2 computer system diagnostic software for the DS-40 and DS-41 disk subsystems and the removable disk system (RDS-5). The manual describes the micro-based disk maintenance system (MDMS) diagnostic software, known as MDMS; the IOS diagnostic test, DD40 (previously DDXMD); and the CRAY-2 diagnostic tests, known as CD40/41, GDTB and GDTC, GSAB and GSAC.

CDM-1114-0A1 DS-40/41 Disk Subsystem Diagnostic Reference Manual Change Packet. This change packet adds information about using the MDMS diagnostics, IOS diagnostics, and CRAY-2 diagnostics with the DS-4R (a DC-40 disk controller with DD-4R disk drives) and the DS-42 (a DC-40 disk controller with DD-42 disk drives) disk subsystems.

CDM-1115-0B0 CRAY Y-MP and CRAY X-MP EA CRAY Y-MP and CRAY X-MP EA. This user guide provides procedures and supporting descriptions used in typical day-to-day operations of the MWS. This guide also describes many of the Cray Research applications included in the M2.0 diagnostic release including the config, cfg, and compatibility programs. Sections describe system startup and shutdown, the mws maintenance login environment, the online diagnostic directory structure, backup and restore procedures, system security, WACS programs and procedures, the error logging system, and the system clean and clear utilities. The writing shell scripts and SSID and VME board test sections were deleted. Board testing information is included in the OWS and MWS Installation and Maintenance Manual.

CDM-1116-0B0 CRAY Y-MP and CRAY X-MP EA Off-line Diagnostic Reference Manual. This manual contains information on the CRAY Y-MP and CRAY X-MP EA diagnostic

set; the set is composed of VME MWS-based tests, single CPU-tests, multiple CPU-based tests, several utilities, and the monitors. This revision supports the off-line diagnostic release Y1.2, which includes CRAY Y-MP 256-Mword memory and register parity. Section 1, "Diagnostic Overview," was reorganized so that CMS information precedes RUN system information.

New additions are as follows: listing of on-line tests run as off-line tests; example of how to use EDMP; description of the new CONFIG and CFG 2.0 utilities; new table and headers in CFT0 for easier access of information; sample CFT0 routine; new CPU-based tests: YABRTY, YAFOY, YBSR, YREGY, YRPTY, and YSTANY; new utilities: YMPAT and YSCANY; Section 10, "Displaying and Printing Diagnostic Listings"

CDM-1116-0B1 CRAY Y-MP and CRAY X-MP EA Off-line Diagnostic Reference Manual Change Packet. This change packet supports the ME1.1 and M2.0 offline diagnostic releases by updating test and monitor descriptions and adding descriptions for the new tests YVHX and YPINT. The change packet also removes Section 4, Section 10, and part of Section 5. This information is now located in the CRAY Y-MP and CRAY X-MP EA Maintenance Workstation User Guide, publication number CDM-1115-0B0; and the MWS-E User Guide, publication number CDM-1123-0A0.

CDM-1123-0A0 MWS-E User Guide. This user guide provides procedures and supporting descriptions used in typical day-to-day operations of the MWS-E. Sections describe system startup and shutdown, the mws maintenance login environment, the online diagnostic directory structure, backup and restore procedures, system security, WACS programs and procedures, the error logging system, and the system clear utility. This guide also describes many of the Cray Research applications included in the ME diagnostic release. An overview of both the MWS-E and the OWS-E is presented in the MWS-E and OWS-E Hardware Maintenance Manual, publication number CMM-1122-0A0; workstation overview information is not duplicated in this guide. The hardware maintenance manual and this user guide are a documentation set. The index included in each volume covers both the maintenance manual and this user guide.

CDM-1123-0A1 MWS-E User Guide Change Packet. The MWS-E User Guide Change Packet provides an index to the User Guide and includes minor technical changes.

CDM-1125-000 Remote Support System Guide. This guide describes the steps required to set up and install

phase 1 of the Remote Support 3.0 release. The remote support environment, which includes Communication Hubs and Service Centers, is described. Sections describing network security and pager use are also included.

CDM-1125-001 Remote Support System Guide, Version 3.0 Change Packet. The Remote Support System Guide, Version 3.0 Change Packet provides corrections for two figures found in the Remote Support System Guide, publication number CDM-1125-000.

CDM-1126-000 UNICOS Online Diagnostics User Guide. This user guide describes the use of utilities and background mechanisms that schedule online diagnostics, and how to use mainframe online diagnostics, unitap, and the OLNET online diagnostic network communications program.

CEM-0001-000 The CRAY-1 and CRAY X-MP Computer Systems Remote Maintenance Manual is a guide to performing remote maintenance on CRAY-1 and CRAY X-MP computer systems and is written for CRI field engineers. Site-specific remote maintenance information must be inserted into sections provided in the manual. The manual contains some remote-control and communications information.

CEM-1119-PR1 Cray Research, Inc. Remote Support System Guide. This manual explains remote support release 2.0 and its features. It provides information on how to keep the remote support system secure and how to set up an Area Service Center for remote support. This manual contains procedures for installing the hardware and software for remote support, setting up a remote support environment, performing remote support sessions on CRI equipment, and administering remote support. This document is a preliminary copy and may contain technical inaccuracies. Please advise the Hardware Publications and Training Department of any technical errors you find. Do not copy or disseminate this information.

CID0100000 The CRAY X-MP/216 Computer Systems Timing Diagrams Hardware Maintenance Manual describes the completion of each machine language instruction on a clock-period-by-clock-period basis. This manual is written for CRI field engineers. For each instruction there is a brief description and a diagram that shows the flow of control, address, and data signals generated by the instruction. Diagrams are also provided for 16- and 32-bank instruction fetch sequences.

CID0101000 CRAY X-MP/48, 416 Computer Systems Instruction and Timing Diagrams.

CID0102000 The CRAY X-MP/1 Computer Systems Instruction Timing Diagrams Hardware Maintenance Manual describes the completion of each machine language instruction on a clock period-by-clock period basis. This manual is written for CRI field engineers and system test personnel. For each instruction there is a brief description and a diagram that shows the flow of control, address, and data signals generated by the instruction. Diagrams are also provided for 16- and 32-bank instruction fetch sequences.

CID-0119-000 The CRAY X-MP EA/464 Computer Systems Instruction Timing Diagrams describes the completion of each machine language instruction on a clock period-by-clock period basis. This manual is written for CRI field engineers and system test personnel. For each instruction there is a brief description and a diagram that shows the flow of control, address, and data signals generated by the instruction.

CMM-0104-000 CRAY X-MP/1, 2 Computer Systems Maintenance Aids Hardware Maintenance Manual is written for CRI field engineers and contains maintenance aids such as block diagrams, chip charts, and flow charts for CRAY X-MP/1,2 computer systems. This manual's publication number was previously HMM-0803. This publication includes organizational changes, additional information, updated diagrams, and various technical changes. This printing makes all previous revisions obsolete.

CMM-0107-000 (prev. HMM-0806) The CRAY X-MP/4 Computer Systems Maintenance Aids Manual contains maintenance aids such as block diagrams, chip charts, and flow charts for the CRAY X-MP/4 computer system. Changes to this publication include organizational changes, added information, updated diagrams, and various technical changes. This manual is written for CRI field engineers.

CMM-0120-000 The CRAY X-MP/14se Computer Systems Maintenance Aids Manual is written for CRI field engineers and check-out personnel who repair and maintain CRAY X-MP/14se computer systems. It contains detailed block diagrams, scope charts, and chip charts.

CMM-0123-000 CRAY X-MP EA Computer Systems Maintenance Aids Manual. This manual contains quick reference troubleshooting information for the CRAY X-MP EA/1, 2, and 4 computer systems.

CMM0202000 The CRAY-2 Computer Systems Maintenance Aids and Maintenance Procedures Hardware

Maintenance Manual is written for CRI field engineers and check-out personnel who repair and maintain CRAY-2 computer systems. This manual contains detailed block diagrams and chip charts with explanations. A preventive maintenance index and preventive maintenance procedures (PMP/PMI) are also included.

CMM-0202-001 CRAY-2 Maintenance Aids and Maintenance Procedures Change Packet. The purpose of this manual is to aid field engineers in troubleshooting system failures and in maintaining CRAY-2 Computer systems. This change packet incorporates into voltage margin procedures information regarding the +5-V CRAY-2 computer systems and the CRAY-2 split-bus computer systems. Electrostatic discharge (ESD) guidelines have been added. The manual also incorporates numerous CRAY-2 technical changes made to the entire computer system. Format changes have been made to all preventive maintenance index/preventive maintenance procedures (PMI/PMP) publications.

CMM-0204-000 The CRAY-2 Theory of Operations Maintenance Manual was written for CRI employees who require detailed knowledge of the CRAY-2 computer system. The manual describes in detail the CRAY-2 system, its operation, and the use of supporting engineering documentation. The manual sections describe architecture and construction, foreground system, system clock, common memory, background processor, power distribution, cooling, wire tabs, Boolean, and gate-array Boolean.

CMM-0204-001 The CRAY-2 Theory of Operations Hardware Maintenance Manual Change Packet adds the "Foreground System" section to the manual. This section describes the foreground processor and its modules, CRAY-2 I/O channels, disk controllers and their functions, channel protocol information, and maintenance control console information.

CMM-0404-0A0 The CRAY Y-MP Series Theory of Operations Manual describes the features and internal operations of the CRAY Y-MP computer system. This manual describes the operation of the central processing units (CPUs), which run instructions, provide memory protection, report hardware exceptions, and provide interprocessor communications within the computer system. Central memory and I/O channels are also described. Revision A adds Section 2 - Central Memory, which describes the organization and operation of central memory; Section 4 - CPU Data Registers, which describes the operation of the CPU data registers; Section 5 - Functional Units, which describes the operation of the address, scalar, vector, and floating-point

functional units; Section 6 - Interprocessor Communication, which describes communication and control between CPUs; Section 7 - Real-time Clock, which describes the operation of the real-time clock; Section 8 - Programmable Clock, which describes the operation of the programmable clock; and Section 13 - Engineering Documentation, which explains how to interpret the engineering documentation associated with the CRAY Y-MP computer system. This manual is written for CRI field engineers and systems test personnel maintaining the computer. The reader should be familiar with digital computers and the basic architecture of the CRAY Y-MP computer system.

CMM-0405-0A0 CRAY Y-MP Series Power Distribution and Refrigeration Manual. The CRAY Y-MP Series Power Distribution and Refrigeration Manual describes the refrigeration, electrical power, and warning and control systems in CRAY Y-MP computer systems having 10xx, 14xx, and 15xx mainframe serial numbers. This revision incorporates descriptive material from the HW training manual, HTV-0683 CRAY Computer Systems Power and Refrigeration, and describes the newer refrigeration condensing units, RCU-6 and RCU-4. Written for CRI field engineers, the manual includes the following sections: overview of the electrical power, cooling, and warning and control systems that support the computer system operation; refrigeration system details; electrical system details; and warning and control system details. Maintenance and repair procedures have been transferred to appropriate procedure manuals: CMM-0406-0B0 and CMM-0407-000.

CMM-0406-0B0 CRAY Y-MP System PMI/PMP Maintenance Manual. This manual contains PMIs/PMPs for CRAY Y-MP systems with mainframes in the 10xx, 14xx, and 15xx serial number series. Preventive maintenance indexes (PMIs) and preventive maintenance procedures (PMPs) for all 10xx, 14xx, and 15xx series equipment are described in this manual. The maintenance procedures for the CRAY Y-MP mainframe and heat exchanger unit (HEU), the I/O subsystem (IOS), the SSD solid-state storage device, and the support equipment: operator workstation (OWS), maintenance workstation (MWS), refrigeration condensing units (RCUs), motor-generator sets (MGSs), and power distribution units (PDUs) are described. The maintenance procedures for peripheral equipment: front-end interfaces (FEIs) and disk storage units (DSUs) are also described. Each PMP contains procedures on inspecting, adjusting, or testing system components. The "Preventive Maintenance Scheduling" section provides helpful information for sites planning preventive maintenance schedules. This revision replaces CMM-0406-0A0 and includes the most recent engineering and maintenance procedure

changes.

CMM-0406-0B1 CRAY Y-MP System PMI/PMP Maintenance Manual Change Packet. This change packet describes the PMNOTIFY utility that runs on maintenance workstations configured with 10xx, 14xx, and 15xx series CRAY Y-MP systems. The utility generates e-mail messages to alert the site when preventive maintenance activities are scheduled.

CMM-0407-0A0 CRAY Y-MP Field Repair Procedures. This manual contains the field repair procedures for CRAY Y-MP8, CRAY Y-MP4, and CRAY Y-MP2 computer systems (mainframes in the 1000, 1400, and 1500 series). The manual includes electrostatic discharge guidelines and replacement procedures for the warning and control system (WACS), mainframe chassis, modules, power system, refrigeration condensing unit (RCU), heat exchanger unit (HEU), and motor-generator set (MGS).

CMM-0411-000 CRAY Y-MP 2E, 4E, and M92 Systems Power Distribution and Refrigeration Manual. This manual describes the refrigeration, power distribution, and warning and control systems in CRAY Y-MP computer systems that have 1600, 1900, 800, and 2600 module cabinet serial numbers. It also includes information on both the revision 2 and revision 2a cooling units (RCU-8). This manual includes refrigeration system adjustment procedures and power and refrigeration troubleshooting information. This manual is written for CRI field engineers.

CMM-0415-000 CRAY Y-MP2E and CRAY Y-MP4E Preventive Maintenance and Field Repair Procedures Manual. This manual contains both preventive maintenance and field repair procedures for CRAY Y-MP2E and CRAY Y-MP4E computer systems. Preventive maintenance indexes (PMIs) and preventive maintenance procedures (PMPs) are in Part 1 of the manual. Field repair procedures are in Part 2 of the manual. The maintenance procedures cover the mainframe and cooling unit (CU), operator workstation (OWS), maintenance workstation (MWS), front-end interfaces (FEIs), and disk storage units (DSUs). The repair procedures cover the warning and control system (WACS), chassis, modules, quarter boards, power system, and cooling unit.

CMM-0415-001 CRAY Y-MP2E and CRAY Y-MP4E Preventive Maintenance and Field Repair Procedures Change Packet. The CRAY Y-MP2E and CRAY Y-MP4E Preventive Maintenance and Field Repair Procedures Change Packet updates the CRAY Y-MP2E and CRAY Y-MP4E Preventive Maintenance and Field Repair Procedures Manual. It adds procedures for replacing the mainframe transformer and for

replacing the cooling unit circuit breakers.

CMM-0417-000 CRAY Y-MP8E and CRAY Y-MP8I Preventive Maintenance and Field Repair Procedures Manual. This manual includes guidelines for electro-static discharge control and safety procedures. Preventive maintenance and field repair procedures are described for the following CRAY Y-MP8E and CRAY Y-MP8I computer system components: warning and control system (WACS), mainframe chassis (MFC), modules, power system, refrigeration condensing unit (RCU), heat exchanger unit (HEU), and motor-generator set (MGS).

CMM-0418-0A0 CRAY Y-MP2E and CRAY Y-MP4E Computer Systems Installation Reference Manual. The CRAY Y-MP2E and CRAY Y-MP4E Computer Systems Installation Reference Manual provides technical information to assist Cray Research field personnel with the installation of a CRAY Y-MP2E or CRAY Y-MP4E computer system. An overview of the installation process, step-by-step mechanical installation procedures, and electrical check-out procedures are provided. In addition, this revision supports the installation of Rev. 2A cooling units. Electrical checkout procedures for the SSD-E have been added, and several diagrams have been revised.

CMM-0421-000 CRAY Y-MP 2E and CRAY Y-MP 4E Systems Troubleshooting Guide. This guide describes the tools, techniques, and procedures for troubleshooting a CRAY Y-MP 2E or CRAY Y-MP 4E system consisting of a mainframe, IOS-E, SSD-E, and DD-60 disk drive.

CMM-0425-000 CRAY Y-MP 8E and CRAY Y-MP 8I Power and Refrigeration Maintenance Manual. This manual describes the refrigeration, electrical power, and warning and control systems in CRAY Y-MP computer systems that have 700, 1700, and 1800 mainframe serial numbers. This manual incorporates descriptive material from the Cray Computer Systems Power and Refrigeration Hardware Training Volume, publication number HTV-0683, and describes the newer refrigeration condensing units, RCU-3 and RCU-4. This manual is written for CRI field engineers.

CMM-0425-001 CRAY Y-MP 8E, 8I, M94, and M98 Power Distribution and Refrigeration Maintenance Manual Change Packet. This change packet adds information on the CRAY Y-MP M94 and M98 systems to the CRAY Y-MP 8E and 8I Power Distribution and Refrigeration Manual. It covers information pertaining to the additional power supply required by the DRAM used in the CRAY Y-MP M94 and M98 systems. All additional material contained in this change packet pertains to the CRAY Y-MP 8E, 8I, M94, and M98 systems.

CMM-0431-000 CRAY Y-MP EL Hardware Troubleshooting and Maintenance Manual. This manual includes information about the architecture of the major components of the system, the peripheral devices, and operations within the system. Field repair instructions and remote support information are also provided. The appendix contains the instruction set for the CRAY Y-MP EL system.

CMM-0502-000 CRAY Y-MP C90 Computer System Hardware Maintenance Manual. This manual is written to assist field engineers in maintaining the CPU, memory, and clock portions of the computer system. It is also designed to assist product specialists in repairing system problems in the field and to assist system test technicians in diagnosing and repairing system problems and modules at the chip level. The manual is a three-volume set whose organization is described as follows: Volume 1 introduces and describes the CRAY Y-MP C90 computer system, 10K-gate array macrocells, documentation, and the memory module. Volume 2 describes the memory control logic, CPU control, error reporting, shared registers, maintenance features, and I/O channels. Volume 3 describes the hardware registers and functional units and includes timing diagrams.

CMM-0506-PR1 CRAY Y-MP C90 Power Distribution and Refrigeration Manual. This manual describes the electrical power, refrigeration, and warning and control systems in the CRAY Y-MP C90 computer system. The manual includes information about the warning and control system (WACS) used with the mainframe and IOS/SSD-E cabinets and the controllers used with the RCU-5, RCU-5A, RCU-6, RCU-7, and system heat exchange units. This manual also includes a section on system troubleshooting. This manual is intended for Cray Research field engineers who have attended the power distribution and refrigeration course.

CMM-0700-000 CRAY XMS System Support Service Manual. The CRAY XMS System Support Service Manual, publication number CMM-0700-000, provides a detailed theory of operations for each of the components included in the CRAY XMS computer system. Section 1 gives an overview of the system; Sections 2 and 3 describe the operation of the central processing unit (CPU) and the VMEbus-based I/O subsystem (IOS) respectively. Section 4 discusses peripheral devices. The field repair procedures are described in Section 5. This manual is written for Cray Research, Inc. (CRI) field engineers who troubleshoot, repair, and maintain the CRAY XMS computer system.

CMM-0703-000 CRAY XMS System Primary Maintenance

Manual. The CRAY XMS System Primary Maintenance Manual is written for Cray Research, Inc. (CRI) field engineers who perform maintenance on CRAY XMS computer systems. This manual contains an overview of the system as well as field repair procedures to follow when a failure has been traced to a field-replaceable unit.

CMM-0705-000 Installing the CRAY Y-MP EL System. This manual contains the procedures for installing the CRAY Y-MP EL system hardware, system console, and maintenance workstation. It also contains the procedures for inspecting and unpacking the system once it has arrived at the customer site. The procedures for powering up and powering down the CRAY Y-MP EL system are also included.

CMM-1000-0A0 The SSD Solid-state Storage Device Hardware Maintenance Manual describes the theory of operation and maintenance procedures for the SSD and is written for CRI field engineers and system test personnel. Section 1, SSD Solid-state Storage Device Overview, is an overview of the SSD and describes SSD characteristics and configurations. Section 2, Theory of Operations, describes the basic operating principles of the SSD. Section 3, Maintenance, describes the diagnostics, maintenance procedures, and troubleshooting techniques for the SSD. Revision A includes added theory of operations, maintenance, and diagnostic information. All previous versions are obsolete.

CMM-1003-PR1 The IOS Models C and D Hardware Maintenance Manual. Describes the maintenance philosophy for the I/O subsystem (IOS) Models C and D. The maintenance philosophy includes the system overview, theory of operations, preventive maintenance, and troubleshooting information. This manual is written for CRI field engineers.

In this preliminary revision, Sections 2 and 3 describe differences between the IOS Models C and D; Section 4 incorporates new PMI/PMP information for both IOS Models C and D. Change bars have been included for the reader's convenience. This revision can be used for both the IOS Models C and D, as the title indicates; references to the IOS Model C also apply to the IOS Model D, unless specifically noted otherwise. Use publication number CMM-1003-PR1 when ordering this revised preliminary manual. All previous printings are obsolete.

CMM-1015-000 SSD Solid-state Storage Device Model E Hardware Maintenance Manual. The SSD Solid-state Storage

Device Model E Hardware Maintenance Manual, publication number CMM-1015-000, was written to assist Cray Research, Inc. customer service personnel to troubleshoot hardware maintenance problems. The manual describes the internal logic operations for all memory and channel configurations for the SSD model E. Detailed descriptions of the memory, port/buffer, and control modules are provided in the manual. In addition, detailed descriptions of the low-speed (LOSP), high-speed (HISP), and very high-speed (VHISP) channel operations are also provided.

CMM-1016-000 IOS Model E Hardware Maintenance Manual. This manual is written to assist product specialists and STCO personnel in maintaining the IOS model E. This manual describes the internal theory of operation for each board in the IOS-E and channel adapters. It also describes the IOS-E architecture and the I/O channel functions that enable communication among the IOS-E, mainframe, SSD, and peripheral equipment. Each section contains specific diagnostic information for that particular quarter board. The manual is a two-volume set. Volume 1 includes an overview section, a Buffer Board section, and quarter board section for the I/O Processor, CIN/WIN, and HCM. It also includes sections that describe the CCA-1 and DCA-1 channel adapters. Volume 2 describes the DCA-2, TCA-1, TCA-2, HCA-3/4, and HCA-5 channel adapters. It also describes the PINT quarter board, provides a Signal Flow Documentation appendix, and defines abbreviations and acronyms used in this manual. CMM-1100-

0A0 The FEI-3 (VMEbus Interface) Installation and Maintenance Manual describes the Cray front-end interface-3 (FEI-3) for VME-based operator workstations (OWSs) manufactured by Motorola, Inc. and Sun Microsystems, Inc. This manual explains the operation of the FEI-3 and this revision includes procedures on how to install and maintain FEI-3 kits. Sections of the original manual have been reorganized with new section titles. Refer to the record of revision page for more information about the reorganization.

CMM1101000 The Peripheral Expander Chassis (Model 2) Maintenance Manual describes the installation, operation, preventive maintenance, and theory of operations for the units housed in the peripheral expander cabinet. This manual is written for CRI field engineers and system test personnel.

CMM1101001 The Peripheral Expander Chassis (Model 2) Maintenance Manual change packet contains additional information for the TELEX Magnetic Tape Drive, model 9271, that is not available in the OEM manual. Information includes check-out procedures and theory of

operations for the TELEX Magnetic Tape Drive, model 9271.

CMM1102000 The FOL-3 Maintenance Manual describes the operation and maintenance features of the FOL-3 and is written for CRI field engineers. Section 1, Introduction, describes the features and characteristics of fiber-optic technology. Section 2, Theory of Operations, describes how the FOL-3 works. Section 3, Installation, describes the installation process for the FOL-3. Section 4, Maintenance, explains how to maintain the FOL-3 and includes a troubleshooting flowchart.

CMM-1103-0C0 DS-40/41 Disk Subsystem Maintenance Manual. This manual contains information about the components of the DS-40 and DS-41 disk subsystems; specifically, theory of operations, cabling, preventive maintenance, and troubleshooting information are provided. This revision makes the previous version, CMM-1103-0B0, obsolete. Changes from the previous version include the following: Section 2 was reorganized and information was added; the cabling diagrams in Section 3 were improved; and the status information in Section 7 was updated and reorganized.

CMM1106000 The Cray/CDC Interface Maintenance Manual describes the CRI/ Control Data Corporation (CDC) interface and provides information needed to troubleshoot and maintain it. This publication is written for CRI field engineers with the assumption that the reader is familiar with Cray mainframes, IOS maintenance procedures, and CDC I/O procedures.

CMM-1107-000 The Cray Data-streaming Interface Maintenance Manual is revised to include the microcode diagnostic flowcharts, chip information, an IA module clock tuning procedure, and a troubleshooting flowchart. Numerous editorial changes are incorporated. This manual's previous publication number was HM-00090. This revision makes all previous printings obsolete.

CMM-1112-0A0 The Cray High-speed External (HSX) Communications Channel Maintenance Manual describes operation and maintenance of the HSX communications channel, which is used with an IOS and a CRAY-2 computer system. Section 1 is an overview of the HSX channel; Section 2 describes data characteristics, HSX input and output channels, and channel functions; Section 3 describes equipment necessary for installing the HSX channel; and Section 4 describes troubleshooting and diagnostic information. The manual was revised to describe the CRAY-2 HSX channel. This manual is written for CRI field

engineers.

CMM-1120-0B0 OWS and MWS Installation and Maintenance Manual. This manual provides information needed to install, configure, test, maintain, and repair the Motorola-based MWS and OWS.

CMM-1121-000 RDS-5 Maintenance Manual. Provides field engineers with an understanding of how the RDS-5 removable disk subsystem operates, how to install it, and how to repair it. In addition to these topics, the manual contains a general description of the components of the system and how they work together.

CMM-1122-0A0 MWS-E and OWS-E Hardware Maintenance Manual. This manual describes Sun-based MWS-E and OWS-E workstations that are part of CRAY Y-MP systems shipped with an IOS-E. This manual provides information needed to install, configure, test, maintain, and repair the MWS-E and OWS-E.

CMM-1122-0A1 MWS-E and OWS-E Hardware Maintenance Manual Change Packet. The MWS-E and OWS-E Hardware Maintenance Manual Change Packet provides an index for the MWS-E and OWS-E Hardware Maintenance Manual.

CMM-1127-000 FOL-4 Installation and Maintenance Manual. This manual provides an overview, detailed theory of operation, and installation and maintenance instructions for the Cray Research, Inc. fiber-optic link low-speed (LOSP) channel extender (FOL-4). The FOL-4 is compatible with any device that connects to a Cray Research LOSP channel.

CMM-1128-000 FDR-4 and MPX-24 Systems Maintenance Manual. This manual contains information about the Cray Research, Inc. fiber-optic VHISP channel extender and multiplexer systems. This maintenance manual includes a system overview, the system theory of operation, a preventive maintenance index (PMI), preventive maintenance procedures (PMP), diagnostic information, and repair procedures.

CMM-1129-000 SMP-1 Semaphore System Maintenance Manual. This manual contains information about the SMP-1. The SMP-1 is a file locking system that is accessible from two to eight CRI computer systems. This maintenance manual includes an overview, theory of operation, PMI, PMP, diagnostic information, and repair procedures for the SMP-1.

CMQ0103000 CRAY X-MP Gate Array Pinout Card.

Identifies the CRAY X-MP gate arrays and the pins used for each of the gate arrays. This pinout card is for CRI employees who need specific gate array information for the CRAY X-MP.

CMQ-0105-0A0 The CRAY X-MP Hardware Reference Card lists the CAL instruction summary, exchange package, off-line diagnostic data, functional unit times, mainframe functional block diagram, and other information needed by hardware personnel repairing the computer system.

CMQ-0207-000 The CRAY-2 Gate-array Pinout Card lists the CRAY-2 gate-array pinouts and is now available from Technical Operations-Logistics.

CMQ11090A0 The Cray I/O Subsystem Model C/D Hardware Reference Card is a quick reference for CRI field engineers and system test personnel. This card describes channel commands, channel functions, channel modes, instruction sets, gate-array pinouts, and error-reporting paths.

CMQ-9979-0A0 Field Tools Catalogue. Provides information on all tools presently listed in the Logistics database. The catalog provides a photograph of each tool and lists its noun, description, CRI part number, vendor, vendor number, and repair code. This revision incorporates approximately 95 new tools that are not available.

COM-0427-000 CRAY Y-MP 2E System Hardware Guide. This guide describes the mainframe, IOS-E, SSD-E, MWS-E, OWS-E, and Cray Research, Inc. peripherals used in the CRAY Y-MP 2E computer system. Included in the guide are system power and refrigeration figures, cabling diagrams, chassis maps, and system block diagrams.

COM-0428-000 CRAY Y-MP 4E System Hardware Guide. This guide describes the mainframe, IOS-E, SSD-E, MWS-E, OWS-E, and Cray Research, Inc. peripherals used in the CRAY Y-MP 4E computer system. Included in the guide are system power and refrigeration figures, cabling diagrams, chassis maps, and system block diagrams.

COM-1124-000 60 Series Disk Systems Guide. This manual contains information on the DD-60 and DD-61 disk drives, the DE-60 disk enclosure, and the DCA2 disk channel adapter. Information on hardware, basic theory of operations, and flaw management utilities is also included.

COM-1131-000 DD-4R Disk Drive Guide. The DD-4R Disk Drive Guide contains information on cabling

configurations, format, hardware, and diagnostic statuses for the DD-4R disk drive. The DD-4R is a replacement for the DD-40 in a DS-40 disk subsystem.

COM-1132-000 DD-42 Disk Drive Guide. This guide contains information on cabling configurations, format, hardware, and diagnostic statuses for the DD-42 disk drive. The DD-42 is a component of the DS-42 disk subsystem. Most of the information in this manual also applies to DD-4R disk drives with Upgrade Option-42.

COM-9967-000 Cray Research, Inc. Field Service Handbook. This handbook contains nine sections of quick reference information and customer service guidelines that are written for Cray Research, Inc. field service personnel. Guidelines in the handbook describe general Customer Service recommendations and policies about safety and security, escalation procedures, site and equipment standards, new products, publications, information services, training, diagnostics, logistics support, and repair services. Each guideline identifies the Customer Service department person to contact if you need more information or personal assistance with a field service need.

COM-9969-000 The Protection of Information Policy. The Protection of Information Policy, publication number COM-9969-000, is written for supervisors and higher management but contains information that is appropriate for all employees who handle private and proprietary information. Topics covered include reasons for protecting information, the levels of protection, examples of documents for each level of protection, how to disseminate and dispose of each type of information, and examples of the forms required to release information. This document also discusses the Protection of Information Committee and provides a list of contacts within Cray Research for questions about protecting and disseminating information.

COM-9969-001 Protection of Information Policy Change Packet. In this change packet, Section 5 and part of Section 7 have been revised, and the contact list has been updated. Also, an index has been included.

COM-9980-0A0 Incident Reporting System User Guide. This manual describes in detail the incident reporting (IR) system used by field engineers and systems analysts. The new organization of incident hierarchy and procedures for reporting incidents are described. Procedures for accessing the IR system and performing batch transfers of files are also described. A tabulated listing of all database tables and their fields is provided.

COM-9980-0A1 Incident Reporting System User Guide change packet. This change packet provides an index of the information provided in COM-9980-0A0.

COM-9980-0A2 Incident Reporting System User Guide (Version 6.0) Change Packet. This change packet updates offline recording of incidents using PC-IR, version 6.0. Hypothetical situations are presented to illustrate how to report incidents. A section explaining how to record and view site configuration records has also been added.

COM-9994-0B0 Field Operation Guidelines. The Field Operation Guidelines manual contains general site-operation guidelines for Cray Research field service personnel. The manual includes the following tabbed sections: "General," which includes information on ESD protection; "Hardware Training," which discusses issues such as prerequisites; "Logistics," which includes directions for ordering spare parts; "Off-line Diagnostics," which includes diagnostic maintenance procedures; "On-line Diagnostics," which discusses issues such as release installation; "Hardware/Software Combined," which contains information on joint escalation procedures; "Software Product Support," which describes issues such as obtaining prerelease software; and "Hardware Product Support," which details issues such as FCO installation. This revision includes revised guidelines and eliminates obsolete ones.

CQC-0203-0A0 CRAY-2 CAL Version 2 Hardware Reference Card lists the CRAY-2 instruction set and exchange package and includes the block diagram. This revision includes information on the EB common memory port status register bits, the DF module node functions, and includes various technical changes.

CQC-0401-000 The CRAY X-MP EA Hardware Reference Card lists the CRAY X-MP EA instruction set and exchange package, and includes the block diagram. The card also includes functional unit times, channel information, and off-line diagnostic standard locations.

CQC-9973-0A0 Guidelines for Protection of Information. This card includes the most current policies that Cray Research uses to protect information. Included for readers' convenience are a list of contact persons and a flowchart showing the process to follow when disseminating information.

CQH-0403-0B0 The CRAY Y-MP Series Hardware Reference Booklet is a pocket-sized quick-reference booklet written primarily for CRI field engineers. The following

information is included: CAL instruction set, exchange package, status register bits, register parity error bit assignments, maintenance panel CPU selection, wire name and CPU-path priority schemes, chassis map and fanout charts, memory addressing, I/O channels, HISP error codes and error reporting, and off-line diagnostic standard locations.

CQH-0408-0A0 CRAY Y-MP and CRAY X-MP EA Off-line Diagnostic Quick Reference Booklet. The CRAY Y-MP and CRAY X-MP EA Off-line Diagnostic Quick Reference Booklet contains information about the Cray maintenance system (CMS) and the off-line diagnostic set composed of VME maintenance workstation (MWS)-based tests, single and multiple CPU-based tests, several utilities, and monitors. This revision updates standard location, monitor, and utility information. It adds information about CRAY X-MP off-line diagnostics used with the CRAY X-MP EA system, on-line confidence tests run as off-line tests, diagnostics milestone lists, new CPU-based tests and utilities, test section descriptions, and a diagnostic functional overview table. This booklet is for Cray Research, Inc. field engineers and analysts.

CQH-0432-000 CRAY Y-MP Series and IOS Model E Hardware Reference Booklet. The CRAY Y-MP Series and IOS Model E Hardware Reference Booklet contains three sections of quick reference information. Section 1 contains CRAY Y-MP2, CRAY Y-MP4, and CRAY Y-MP8 fan-out charts as well as 700 series, 800 series, 1600 series, 1700 series, 1800 series, and 1900 series chassis maps. Section 2 contains quick reference information for the entire line of CRAY Y-MP series mainframes and supersedes Cray Research publications number CQH-0403-0B0. Section 3 contains quick reference information for the I/O subsystem model E and supersedes CQH-1011-000.

CQH-0436-000 CRAY Y-MP, SSD Model E, and IOS Model E Chassis Map and Fan-out Chart Booklet. This booklet contains downsized chassis maps and fan-out charts. The Logistics department ships this booklet without a binder. Users should insert the chassis maps they need into a 6-ring binder, CRI part number CQQ-9972-0BB, and file the unused chassis maps for reference.

CQH-0437-000 CRAY Y-MP Series Hardware Reference Booklet. This booklet contains quick reference information for CRAY Y-MP computer systems with serial numbers in any of the following series: 10xx, 14xx, 15xx, 16xx, 17xx, 18xx, 19xx, 24xx, 26xx, or 28xx. Insert this booklet in a 6-ring binder, CRI part number CQQ-9972-0BB.

CQH-0504-000 CRAY Y-MP C90 Hardware Reference

Booklet. This booklet contains chassis maps for the CRAY Y-MP C90 mainframe, and the 700 series, 800 series, and 900 series SSD-E and IOS-E. Mainframe and IOS-E hardware reference information is also provided.

CQH-0504-001 CRAY Y-MP C90 Hardware Reference Booklet Change Packet. The CRAY Y-MP C90 Hardware Reference Booklet Change Packet contains hardware reference information for the CRAY Y-MP C90 mainframe. It contains updated chassis maps for the CRAY Y-MP C90 mainframe and the 700 series, 800 series, and 900 series SSD-E and IOS-E. Mainframe and IOS-E hardware reference information is also provided.

CQH-1011-000 IOS Model E Hardware Reference Booklet. The IOS Model E Hardware Reference Booklet contains IOS-E instruction descriptions, channel functions, and channel function diagrams. This booklet is for Cray Research field engineers and analysts.

CQH-1031-000 IOS Model E Hardware Reference Booklet. This booklet is a quick reference guide to IOS-E information: instructions and instruction formats, channel information and channel functions, and downsized block diagrams and error information. The Logistics department ships this booklet without a binder. Users may customize a 6-ring binder with the information they feel is pertinent and file the unused information for future reference. To order a 6-ring binder, use CRI part number CQQ-9972-0BB.

CQM-0117-000 The CRAY X-MP Computer System Diagnostic Quick Reference Guide contains an exact duplication of the CRAY X-MP computer system off-line diagnostic listing preambles produced by the Cray Research, Inc. (CRI) Diagnostic Systems department.

CQM-1008-000 (prev. HQ-1007) Cray I/O Subsystem Diagnostic Quick Reference Guide This reference guide contains an exact duplication of the off-line diagnostic listing preambles for the IOS produced by Cray Research, Inc. This revision includes information on the off line diagnostic release P2.0 for the IOS and makes all previous printings obsolete. The guide's publication number was previously HQ-1007. This guide is written for field engineers.

CQM-1105-0A0 DS-40/DS-41 Quick Reference Manual. The DS-40/DS-41 Quick Reference Manual, CQM-1105-0A0, describes the Cray Research, Inc. (CRI) DS-40 and DS-41 disk subsystems. The manual describes the DD-40/41 disk drive and DC-40/41 disk controller refrigeration system, disk error reports, status information, diagnostics, and flaw

management software. The manual is written primarily for CRI field engineers.

CQM-9992-000 The Manufacturing Soldering Standards Manual contains specific information on how to identify and repair printed circuit board soldering faults. This manual describes soldering acceptance criteria to apply when assembling or repairing CRI modules. A glossary is also provided describing the module terms used throughout the manual. This manual is written for CRI employees who repair CRI modules.

CQM-9993-000 The Field Soldering Standards Manual contains specific information on how to identify and repair printed circuit board soldering faults. This manual describes soldering acceptance criteria to apply when assembling or repairing CRI modules. A glossary is also provided describing the module terms used throughout the manual. The Field Soldering Standards Manual is written for all CRI employees who repair CRI modules.

CQM-9993-001 Field Soldering Standards Change Packet. Adds a section to the original manual which describes component removal using the hot air techniques. Procedures for removing and replacing Flat pack, DIP, MOS, and 2500 macrocell array chips and connectors are also included.

CQQ-0006-000 Packets of lined 4-in. by 6-in. note paper. This 4-inch by 6-inch lined note paper is stocked in packets of 50 sheets per packet. The paper is 6-hole punched to fit the small royal blue 6-ring binders. One packet of this note paper is automatically sent with each order for any reference booklet stocked in this 6-ring binder.

CQQ-9990-0F0 Field Parts Manual. This manual provides cross-reference information on spare parts. Parts lists are sorted by Cray Research part number, part name and description, and vendor name. Another listing is sorted by equipment name and contains the most commonly needed OEM parts for repairing an assembly in the field. The Logistics department's new return parts policy is described, including flowcharts and a sample form. Information describing domestic and international part banks was added with this revision. The CPU Module Compatibility Matrix'' lists was revised. Initial spares kit lists for CRAY Y-MP model E, IOS-E, SSD-E, and DD-60/61 systems and assembly lists for DE-60/61 and CRAY Y-MP EL systems were also added.

CSM-0110-0A0 The CRAY X-MP/2 System Programmer

Reference Manual describes the functions of a CRAY X-MP/2 computer system. The following features are also described: system conventions, CPU resources, CPU control, CPU computing, and CPU instructions relating to a CRAY X-MP/2 computer system. The material in this manual has been reorganized and technical corrections have been incorporated. Material in Appendices A, B, C, and D from the previous version has been incorporated in appropriate sections of the manual. This manual is written for CRI field engineers.

CSM-0111-0A0 The CRAY X-MP/1 System Programmer Reference Manual describes the functions of a CRAY X-MP/1 computer system. The following features are also described: system conventions, CPU resources, CPU control, CPU computing, and CPU instructions relating to a CRAY X-MP/1 computer system. The material in this manual has been reorganized and technical corrections have been incorporated. Material in Appendices A, B, C, and D from the previous version has been incorporated in appropriate sections of the manual. This manual is written for CRI field engineers.

CSM-0112-0A0 The CRAY X-MP/4 System Programmer Reference Manual describes the functions of a CRAY X-MP/4 computer system. The following features are also described: system conventions, CPU resources, CPU control, CPU computing, and CPU instructions relating to a CRAY X-MP/4 computer system. The material in this manual has been reorganized and technical corrections have been incorporated. Material in Appendices A, B, C, and D from the previous version has been incorporated in appropriate sections of the manual. This manual is written for CRI field engineers.

CSM-0116-000 The CRAY X-MP EA System Programmer Reference Manual provides a detailed architectural overview for the CRAY X-MP EA mainframe from a programmer's perspective. It is written to help system programmers write and optimize program code. The manual contains the following sections: CRAY X-MP EA Computer System Overview, Shared Resources, CPU Control, CPU Computation, Parallel Processing Features, Maintenance Mode, and CPU Instruction Descriptions.

CSM-0200-000 The CRAY-2 System Programmer Reference Manual describes the timing and functions of the CRAY-2 computer system. It is written for programmers, systems analysts, and field engineers. The manual describes the operation of common memory, the foreground system, and background processors. Information on the DS-40 disk

subsystem, the high-speed external (HSX) communications channel, new models, and static memory is included.

CSM-0200-001 The CRAY-2 System Programmer Reference Manual Change Packet contains information on the timing and functions of the CRAY-2 computer system. It also describes the system configuration and physical characteristics. This change packet incorporates information on the recent CRAY-2 computer system enhancements. The 512 Mword common memory, improved instruction buffer, vector tailgating, and very large scale integration specifics are incorporated in the appropriate sections.

CSM-0400-0A0 CRAY Y-MP System Programmer Reference Manual. This manual provides a detailed architectural overview for the CRAY Y-MP mainframe from a programmer's perspective. It is written to help programmers and analysts write and optimize program code. This revision addresses the CRAY Y-MP2, CRAY Y-MP4, and CRAY Y-MP8 mainframes. Information is added on the 64-Mword memory, and on memory addressing schemes, shared paths, register parity, and the Autotasking parallel processing software.

CSM-0400-0A1 CRAY Y-MP System Programmer Reference Manual Change Packet. This change packet provides a detailed architectural overview for the CRAY Y-MP mainframe from a programmer's perspective. It is written to help programmers and analysts write and optimize program code. This change packet adds information on the new CRAY Y-MP 128-Mword memory enhancement to the appropriate sections. The new CRAY Y-MP products available are listed in Table 1-1, CRAY Y-MP Configurations and Features. The CRAY Y-MP2 32-Mword, CRAY Y-MP4 64-Mword, and CRAY Y-MP8 128-Mword addressing schemes are included in Section 2. All changes are identified with a change bar in the left margin. All of Section 2, "CPU Shared Resources," has been included in this change packet because the majority of text and diagrams in this section has moved to different pages.

CSM-0400-0A2 CRAY Y-MP System Programmer Reference Manual Change Packet. This manual provides a detailed architectural overview for the CRAY Y-MP mainframe from a programmer's perspective. It is written to help programmers and analysts write and optimize program code. This change packet adds information on CRAY Y-MP E series models and CRAY Y-MP 256-Mword memory enhancement to the appropriate sections. The CRAY Y-MP E series products available are listed in Section 1 tables. Descriptions of additional addressing schemes for all new models are included in Section 2. All changes are indicated by change

bars in the left margin. This change packet replaces existing change packet CSM-0400-0A1, which is now obsolete.

CSM-0400-0A3 CRAY Y-MP System Programmer Reference Manual Change Packet. This change packet provides an index for the CRAY Y-MP System Programmer Reference Manual.

CSM-0434-000 CRAY Y-MP M90 Series System Programmer Reference Manual. This manual provides a detailed hardware architecture overview of CRAY Y-MP M90 computer systems from a programmer's perspective. It is written to help system analysts and system programmers write, debug, and optimize program code to run faster and more efficiently.

CSM-0435-000 CRAY Y-MP EL System Programmer Reference Manual. This manual describes the hardware architecture and functions of the CRAY Y-MP EL system. Topics discussed include system components and support equipment, CPU shared resources, CPU control, CPU computation, parallel processing, maintenance mode, and CPU instructions. The audience for the manual includes system analysts and programmers, diagnostic programmers, and design engineers.

CSM-0500-000 CRAY Y-MP C90 System Programmer Reference Manual. This manual provides a detailed architectural overview for the CRAY Y-MP C90 mainframe from a programmer's perspective. It is written to help programmers and analysts write and optimize program code.

CSM-1009-000 The I/O Subsystem Models C and D System Programmer Reference Manual has been converted from a hardware reference manual (previously HR-00081) to a system programmer reference manual to protect Cray proprietary information. I/O subsystem model D (IOS-D) information has been incorporated. The material in this manual has been reorganized. Appendix A is now part of Section 7; Appendix B is now incorporated throughout Section 4; Appendix C is now Section 6; Appendix E is now Section 8; Appendix F is now a part of Section 4; Appendix G is now Section 5.

CSM-1010-000 IOS Model E System Programmer Reference Manual. The IOS Model E System Programmer Reference Manual, publication number CSM-1010-000, describes the architecture and functions of the Cray input/output subsystem model E (IOS-E). Detailed information on the I/O processors, I/O buffers, I/O channels, channel adapters, cluster and workstation interfaces, and the I/O instruction

set is provided. This publication is intended for Cray Research programmers and field engineers.

CSM-1010-001 IOS Model E System Programmer Reference Manual Change Packet. This change packet adds information about a function that controls the Programmed Interrupt signals from the IOS to the mainframe.

CSM-1010-002 IOS Model E System Programmer Reference Manual Change Packet. This change packet add HCA-2 and TCA-2 channel adapter information to Section 5 of the IOS Model E System Programmer Reference Manual.

CSM-1023-000 DMS Macrocode Assembler Programmer Reference Manual. The DMS Macrocode Assembler Programmer Reference Manual, publication number CSM-1023-000, is written for programmers, field engineers, and anyone requiring detailed information on the device maintenance system (DMS) assembler, specifically. Topics covered include invoking the assembler, file formats, syntax, text displays, variable space allocation, and assembly errors. An instruction reference table is also provided. The information contained in this manual does not duplicate information contained in the IOS-E Offline Diagnostic Reference Manual, which is used for broader reference purposes in the field and in STCO. Refer to the IOS-E Offline Diagnostic Reference Manual for information on DMS, DME, MOS, tests, utilities, and monitors.

CSM-1111-000 The FEI-3 (VMEbus Interface) System Programmers Reference Manual describes the Cray front-end interfaces (FEI-3s), a group of front-end interfaces that enable VME-based (VERSA Modular Eurocard-based) systems to communicate with a Cray computer system over a standard low-speed I/O channel. The VMEbus is an industry standard that defines electrical and mechanical specifications for a backplane-bus microcomputer system. This system programmers reference manual is written primarily for Cray Research Inc. (CRI) customer system programmers and field engineers. It assumes the reader is familiar with digital computers, Cray mainframes, and Cray I/O subsystems (IOSs).

CSM-1116-000 The SSD Solid-state Storage Device System Programmer Reference Manual was converted from the SSD Solid-state Storage Device Hardware Reference Manual, Publication number HR-00031, to a system programmer reference manual to protect Cray Proprietary information. This manual provides detailed information on the SSD product line and its operation with the CRAY Y-MP, CRAY X-MP EA, CRAY X-MP, and CRAY-1 computer systems.

CSM-1117-000 The Block Multiplexer Controller System Programmer Reference Manual was converted from and replaces the Block Multiplexer Controller (BMC-5) Technical Note, publication number HN-2047, to a system programmer reference manual to protect Cray proprietary information. Much of the technical information in this manual has been updated.

CSM-1118-000 (prev. HR-00077) The Disk Systems Programmer Reference Manual describes the operation of the CRI DCU-4 and DCU-5 disk controller units, and DD 29, DD-39, and DD-49 disk storage units. Descriptions of disk storage unit operation and appendices with detailed disk drive reference information are provided. This revision incorporates the description of the CRAY-2 foreground processor channel loop and foreground processor subfunctions that control the disk subsystems. This manual has been converted to a system programmer reference manual to protect Cray proprietary information. This manual is written for CRI field engineers and programmers who are familiar with digital computers as well as IOS programming.

CSM-1118-001 Disk Systems Programmer Reference Manual Change Packet. This change packet incorporates information on the DS-41 disk subsystem into Section 5 of the Disk Systems Programmer Reference Manual. This manual describes the channel commands used to control disk drives connected to an IOS Model C or D and the subfunctions used to control disk drives connected to a CRAY-2 foreground processor.

CZM0900000 CDC Removable Storage Disk Drive Manual. Describes the hardware components of the DRB32 adapter. This manual includes theory of operation, functional descriptions of components, VAXBI transactions for the DRB32, addressing and register descriptions, user interface signal descriptions, pin assignments, electrical and environmental specifications, and timing diagrams.

CZM0901000 Kennedy 9400 Tri-density Tape System Manual. Provides general hardware descriptions, installation, operation, and maintenance procedures, and troubleshooting information.

CZM0902000 ZETACO Storage Module Disk Controller Model 296 Manual. Includes installation and maintenance procedures for the disk controller. Use of diagnostics and software are also explained.

CZM0903000 ZETACO Magnetic Tape Coupler Model TC-133 Manual. Provides installation, operation,

maintenance, and troubleshooting for the tape coupler, for PE, NRZ, GCR, and other recording formats. The device emulates the Data General 6021 or 6125 tape subsystems.

CZM0904000 ZETACO Slot Saver V Controller Model 265 Manual. Provides installation, operation, and maintenance procedures for the controller, which is compatible with Data General Nova and Eclipse minicomputers.

CZM-0905-000 ZETACO Model 018-C Logic Chassis Technical Manual. Provides installation, operation, and maintenance procedures for the logic chassis.

CZM0906000 ZETACO Power Supply Model 018-PS Manual. Includes installation, operation, and maintenance procedures for the +5, -5, and +12-volt power supply for the logic chassis.

CZM0907000 ZETACO Magnetic Tape Coupler Model BMX-2 Manual. Provides installation, operation, and maintenance procedures for the tape coupler. The reader is assumed to have (a) a working knowledge of Data General Nova, Eclipse, or MV-class computer hardware and associated operating systems; (b) familiarity with standard installation, power, grounding, and peripheral cabling procedures; and (c) access to technical information describing the tape drives to be installed with this coupler.

CZM-0908-000 TELEX Magnetic Tape Drive Maintenance Manual. Provides installation, operation, and maintenance procedures for the tape drive.

CZM0909000 DEC DRB32-C Technical Manual. Contains information about the Control Data PA3A1/PA3A2 Removable Storage Drives (RSDs).

CZM0910000 DEC DRB32-C Installation Guide. Supplies installation information for the DRB32 adapter. It covers the hardware installation, information on how to run the diagnostics, and troubleshooting and the DRB32 and option modules.

CZM-0917-000 Motorola Microcomputer Systems and Components. Contains data sheets on the Motorola boards and modules used in the MCU and operator's workstation.

CZM-0920-000 VME Delta Series Board Strapping & Configuration Guide.

CZM-0921-000 MVME131XT Microcomputer with

External Cache Accelerator Memory Management, and RS-232 Serial Port Distribution Boards User Manual. Provides general information, installation instructions, functional description, and support information for the microcomputer.

CZM-0922-000 MVME204-1/-2 Dual Ported Dynamic Memory VME module User Manual. Contains operation and maintenance information for the module.

CZM-0923-000 MVME050 System Controller Module and MVME701 I/O Transition Module User's Manual. Provides general information, preparation for use and installation instructions, operating instructions, functional description, and support information for the module.

CZM-0924-000 Installation Instructions for MVME323 Kit. Contains information for installing the kit.

CZM-0925-000 MVME360 SMD Disk Controller User's Manual. Contains operation and maintenance information for the controller.

CZM-0927-000 MVME330 Ethernet Controller User's Manual. Contains operation and maintenance information for the controller.

CZM-0928-000 Installation Instructions for MVME330 Kit. Contains information for installing the kit.

CZM-0929-000 6-Channel Serial Transceiver Module User's Manual. Contains operation and maintenance information for the module.

CZM-0930-000 MVME710 8-Channel Serial I/O Distribution Module User's Manual. Provides general information, hardware preparation, and support information for the module.

CZM-0931-000 Installation Instructions for MVME710F Kit. Contains information for installing the kit.

CZM-0932-000 Installation Instructions for MVME335 Kit. Contains information for installing the kit.

CZM-0934-000 MVME Streaming Tape Controller VME module User's Manual. Provides general information, hardware preparation, installation instructions, operating instructions functional description, and support information for the MVME350 Streaming Tape Controller.

CZM-0935-000 Installation Instructions for DSD1

Hard Disk Drive. Provides installation instructions for the 161Mb ESDI hard disk drive.

CZM-0936-000 Scorpion 1/4" Streaming Tape Drive Product Description. Describes features, specifications, preventive maintenance, and theory of operation of the Archive Scorpion 1/4-in. streaming tape drive.

CZM-0937-000 Motorola System V/68 Release 3. Set of manuals describing the aspects of Motorola VME-based computer operation, programming, and administration.

CZM-0938-000 MVME130Bug Debugging Package. Provides installation and operation instructions for the software debugging tool.

CZM-0939-000 MVME330 LAN Controller Kernel Software Reference Manual. Provides information on the interfacing of Kernel software with networking protocols, host operating systems, hostbus structures, and to the Local Area Network Controller for Ethernet (LANCE) device.

CZM-0940-000 Cray Tape Channel (CTC) 5300 Hardware Reference Manual.

CZM-0941-000 UNIX System V Command Summary Booklet. Reference for the experienced UNIX user and learning tool for the newcomer. Based on UNIX System V, Releases 2 and 3, it includes commands accessible to the normal user: maintenance, graphics and super user only commands are not included.

CZM-0942-000 MVME130 Diagnostic Firmware User's Manual. Contains information about the setup, operation, and use of the diagnostic system and describes each utility and test.

CZM-0943-000 MVME204-2 Dual Ported Dynamic Memory VMEmodule User's Manual. Provides general information, hardware preparation and installation instructions, operating instructions, and support information for the modules.

CZM-0944-000 MVME332 Intelligent Communications Controller User's Manual. Provides general information, hardware preparation, installation instructions, functional description, operating instructions, and support information for the MVME332 Intelligent Communication Controller Module.

CZM-0948-000 MVME792 Two-channel Video Display Transition VMEmodule User's Manual. Describes the

installation and interconnect signals of the MVME792 Video Display Transition Module.

CZM-0949-000 Wren III Disk Drive OEM Manual. Describes features, specifications, and theory of operation of the CDC Wren III Disk Drive.

CZM-0950-000 MVME323K/D2 WESDI 4201 Panther High-performance VMEbus ESD Disk Controller Manual. Provides installation instructions, functional description, and theory of operation of the ESDI Controller.

CZM-0951-000 Boxed Set of UNIX Software Development Manuals. Describes the commands, function calls, file formats and miscellaneous facilities of interest primarily to programmers on the Motorola VME-based computer.

CZM-0953-000 MVME393 Multi-channel Graphics Display Controller User's Manual. Defines installation, functional description, theory of operation, and support information.

CZM-0954-000 MVME332XT/D1 User's Manual. Provides general information, preparation for use, installation instructions, operating instructions, functional description, and support information for the MVME332xt Intelligent Communication Controller (ICC).

CZM-0955-000 MVME332XTDF/D1 Firmware Manual. This document describes the software interface to the MVME332XT Intelligent Peripheral Controller (IPC). It is intended as an aid in writing device drivers for the I/O devices attached to the MVME332XT. The point of view taken in this document is that of the host CPU. There are many approaches that can be taken in interfacing to the MVME332XT.

CZM-0956-000 MVME141-1/MVME141-2 32-Bit VMEbus/VSB-Based Microcomputer User's Manual. Provides general information, hardware preparation, installation instructions, functional description, and support information for the MVME 141 32-bit VMEbus/VSB-based microcomputer.

CZM-0957-000 MVME141BUG 141 Debugging Package User's Manual. Provides description and installation procedures of the MVME14Bug package.

CZM-0958-000 MVME224-1 and MVME224-2 4Mb and 8Mb DRAM Memory Modules User's Manual. This manual provides general and support information for these memory modules.

CZM-0959-000 Eight-inch Module Drive, PA8G1-2, PA8K1-2, PA8N1-2 User's Manual. Contains maintenance information for the Imprimis PA8G1, PA8G2, PA8K1, PA8K2, PA8N1, PA8N2, and PA8W2 SABRE eight-inch module drives. It provides instructions to all personnel who operate the drive and to customer engineers who install and check out the drive.

CZM-0960-000 EMD/Sabre Eight-inch Module Drive PA8XX Maintenance Manual. Contains maintenance information for the Imprimis PA8XX SABRE eight-inch module drive. It is prepared for the customer engineers and other technical personnel directly involved with maintaining the drive.

CZM-0961-000 EMD/Sabre Eight-inch Module Drive, PA8XX Theory. Describes the theory of operation of the Imprimis PA8XX SABRE eight-inch module drive. It is prepared for customer engineers and other technical personnel directly involved with maintaining the drive.

CZM-0964-000 Diagrams Sabre PA8XX. Contains maintenance information for the Imprimis PA8XX SABRE eight-inch module drive. It is prepared for customer engineers and other technical personnel directly involved with maintaining the drive.

CZM-0965-000 Parts Data 9720 Sabre PA8. Contains parts data information for the Imprimis PA8XX SABRE eight-inch module drive. It is prepared for customer engineers and other technical personnel directly involved with maintaining the drive.

CZM-0966-000 Reference Card A EMD. Reference card that applies to EMC/SABRE disk drives with either the SMD interface or the IPI interface. It provides information to run offline diagnostic tests and interpret the various codes displayed on the status/control panel.

CZM-0967-000 Ampex 230 + Service Manual. Provides installation and maintenance information.

CZM-0969-000 PA8Y2-A Parts Data Manual. This manual contains parts data information for the DD-60 (Seagate ST82368K SABRE Parallel Transfer) Disk Drive. Prepared for customer engineers and other technical personnel directly involved with maintaining the drive, it consists of illustrated listings of field replaceable parts and assemblies.

CZM-0970-000 PA8Y2-A User's Manual. This manual contains maintenance information for the DD-60 (Seagate

ST82368K SABRE Parallel Transfer) Disk Drive. It provides instructions to all personnel who operate the drive and to customer engineers who install and check out the drive. The manual is divided into the following three sections: general equipment functions and specifications; unpacking, installation, and checkout; operations and diagnostic testing.

CZM-0971-000 PA8Y2-A Maintenance Manual. This manual contains maintenance information for the DD-60 (Seagate ST82368KT SABRE) Disk Drive. Prepared for customer engineers and other technical personnel directly involved with maintaining the drive, it is divided into the following three sections: general information including tools and materials, warnings and precautions, testing and accessing the drive; procedures to assist in troubleshooting; and procedures for repair of the drive.

CZM-0972-000 Sabre Synchronized Spindle System Product Specification. This manual contains the engineering specification for the DD-60/61 Disk Drive.

CZM-0973-000 Interface Specification for IPI-2 Intelligent Peripheral Interface. This manual contains the engineering specification for the DD-60/61 Disk Drive interface.

CZM-0974-000 Device Specific Command Set for Magnetic Disk Drives. This manual provides information about the international standard (ISO 9318-2) and defines interface commands used by intelligent peripheral interface (IPI) devices.

CZM-0975-000 Enhanced Physical Level (IPI). This manual provides information about the international standard (ISO 9318-6) and defines mechanical, electrical, and bus protocol requirements of intelligent peripheral interface (IPI) devices.

CZM-0976-000 DD-61 User's Manual. This manual contains maintenance information for the DD-61 (Seagate ST82500K IPI Interface) Disk Drive. It provides instructions to all personnel who operate the drive and to customer engineers who install and check out the drive.

CZM-0977-000 DD-61 Parts Data Manual. This manual contains parts data information for the DD-61 (Seagate ST82500K) Disk Drive. Prepared for customer engineers and other technical personnel directly involved with maintaining the drive, it consists of illustrated listings of field replaceable parts and assemblies.

CZM-0978-000 DD-60/61 Pocket Reference. This manual contains diagnostic test descriptions and status codes for troubleshooting primarily the DD-60 Disk Drive. Some information is applicable to the DD-61 Disk Drive.

CZM-0979-000 Streaming Cartridge Tape Drive Product Manual. This manual describes the use and maintenance of the tape drive.

CZM-0980-000 Tapemaster 3000, VMEBus Tape Drive Controller Product Specification. This manual provides general and support information for the controller.

CZM-0981-000 Rimfire 3400, VMEBus ESDI Drive Controller Product Specification. This manual provides general and support information for the controller.

CZM-0982-000 130 Series, FXP Series, Ethernet Intelligent Controller Reference Guide. This manual contains general and support information for this network controller.

CZM-0983-000 EXB-8200 8mm 425 PROM Cartridge Tape Subsystem Interface User Manual. This manual describes the use and maintenance of the tape subsystem.

CZM-0984-000 HK68/V30/HK68V30XE User's Manual. This manual describes the use and maintenance of the VMEbus-based input/output subsystem.

CZM-0985-000 V30 Block Diagrams. This manual is a set of drawings supporting the VMEbus-based input/output subsystem.

CZM-0986-000 DK515 Winchester Disk Drive Product Specification. This manual provides general and support information for the disk drive.

CZM-0987-000 DK515 Winchester Disk Drive Service Manual. This manual contains repair and maintenance information for the disk drive.

CZM-0988-000 MC3 User's Guide. This manual provides operating information for the memory control modules.

CZM-0989-000 MC5 Quick Reference Guide. This manual contains reference data for operating and maintaining memory control modules.

CZM-0990-000 Strategy 2 Disk Array Controller

Operation Manual. This manual contains operating information for the disk array controller.

CZM-0991-000 Strategy 2 Disk Array Controller Installation Manual. This manual describes procedures for installing the disk array controller.

CZM-0992-000 Strategy 2 Drive ID Codes. This manual contains data code information for the disk array controller.

CZM-0993-000 Strategy 2 High Speed Interface 2. This manual contains interface information for the disk array controller.

CZM-0994-000 Strategy VME 2 Interface Operation Manual. This manual describes the operation of the disk array controller as it controls the disk drives.

CZM-0995-000 PI17 Peripheral Interface Reference Manual. This manual contains general information about the peripheral controller.

CZM-0996-000 PIx92 Processor Interface Hardware Reference Manual. This manual contains hardware information about the peripheral controller.

CZM-0999-000 DD-61 Maintenance Manual. This manual contains maintenance information for the DD-61 (Seagate ST82500K) Disk Drive.

HM-00111 The CRAY X-MP Series Refrigeration Maintenance Manual describes the operation and maintenance of the CRAY X-MP series mainframe and auxiliary refrigeration control units (RCU-1 and RCU-2). Section 1 is an introduction to RCU operation and common terms associated with refrigeration systems; Section 2 describes the components of the RCU-1 and RCU-2; Section 3 provides maintenance information.

HM-00120-0A DD-49 Disk Storage Unit Troubleshooting Guide. Describes procedures for troubleshooting hardware problems associated with the CRI DD-49 Disk Storage Unit. This manual is intended to assist technical support engineers and field engineers who are familiar with the operation of and maintenance procedures for the DD-49 Disk Storage Unit.

HM-00573 E The CRAY-1 Instruction Timing Diagrams Field Engineering Reference Manual contains instruction timing diagrams for CRAY-1 S/N 3 computer

systems including the S series. The manual illustrates each machine language instruction on a clock-period-by-clock-period basis and is written for CRI field engineers.

HM-00811 A The CRAY-1 S Series CPU Block Diagrams contains block diagrams for the CRAY-1 S series computer system CPU and is written for CRI field engineers. The diagrams represent a simplified view of central processing unit logic and each section is divided into module-oriented diagrams displaying input and output terms associated with each module. This manual is written to aid in isolating problems to the module level.

HM-00815 The CRAY-1 S Series I/O Subsystem and Block Diagram Field Engineering Reference Manual illustrates the interconnection and operation of all functional areas within the CRAY-1 S series I/O subsystem. This manual is written to help CRI field engineers isolate problems to the module level.

HM-00820 01 The CRAY-1 S Series Refrigeration Maintenance Manual describes the mechanical refrigeration operations necessary to transfer heat generated by integrated circuits and power supplies. This manual is written for CRI field engineers. Refrigeration principles are described and definitions are provided, along with 25- and 50-ton refrigeration system component definitions, refrigerant piping, troubleshooting, and preventive maintenance procedures.

HMM-0587 04 The CRAY-1 S Series Computer Systems Reciprocal Approximation Unit Troubleshooting Field Engineering Reference Manual is a troubleshooting tool for the reciprocal functional unit. This manual is written for CRI field engineers and should be used in conjunction with the diagnostic super simulate floating reciprocal (SSFR).

HMM-0597 C The CRAY X-MP (S/N 110) Chassis Map identifies modules by number and name and shows the physical location of each CRAY X-MP module (S/N 110). This chassis map is for CRI employees looking for specific CRAY X-MP (S/N 110) chassis layout information.

HMM-0598 B The IOS Model B Chassis Map (S/N 40) identifies modules by number and name and shows the physical location of each IOS model B (serial numbers 40 and up) module. This chassis map is for CRI employees looking for specific IOS model B (S/N 40) chassis layout information.

HMM-0599 C The CRAY X-MP/11A Chassis Map identifies modules by number and name and shows the physical

location of each CRAY X-MP/11A module. This chassis map is for CRI employees looking for specific CRAY X-MP/11A chassis layout information.

HMM-0607 D The CRAY X-MP/22, 24 Chassis Map identifies modules by number and name and shows the physical location of each CRAY X-MP/22 or 24 module. This chassis map is for CRI employees looking for specific CRAY X-MP/22 or 24 chassis layout information.

HMM-0611 B The CRAY X-MP/11B, 12B, 14B Chassis Map identifies modules by number and name and shows the physical location of each CRAY X-MP/11B, 12B, or 14B module. This chassis map is for CRI employees looking for specific CRAY X-MP/11B, 12B, or 14B chassis layout information.

HMM-0641 The CRAY X-MP/11B, 12B, 14B S/N 310 Chassis Map identifies modules by number and name and shows the physical location of each CRAY X-MP/11B, 12B, or 14B serial number 310 module. This chassis map is for CRI employees looking for specific CRAY X-MP/11B, 12B, or 14B S/N 310 chassis layout information.

HMM-0643 The CRAY X-MP/12 14 S/N 310 Chassis Map identifies modules by number and name and shows the physical location of each CRAY X-MP/12-14 serial number 310 module. This chassis map is for CRI employees looking for specific CRAY X-MP/12-14 S/N 310 chassis layout information.

HMM-0647 The SSD S/N 39 Chassis Map identifies modules by number and name and shows the physical location of each SSD serial number 39 module. This chassis map is for CRI employees looking for specific SSD S/N 39 chassis layout information.

HMM-0701 02 The IOS Instruction Timing Diagrams Hardware Maintenance Manual contains instruction timing diagrams for every instruction performed on the I/O subsystem (serial numbers 101 and up) and is one of a set of maintenance manuals. Each diagram includes model blocks containing appropriate times and test points.

HMM-0703 01 The IOS Model C Block Diagrams Hardware Maintenance Manual contains diagrams for the I/O subsystem model B (S/N 101). Each diagram shows groupings of modules and signals associated with a given area to show data, address, and control flow.

HMM-0715 A The CRAY-1 S 8 Column Chassis Map identifies modules by number and name and shows the physical location of each 8-column CRAY-1 S module. This chassis map

is for CRI employees looking for specific 8-column CRAY-1 S chassis layout information.

HMM-0729 F The 12 Column CRAY-1 S Series CPU Chassis Map identifies modules by number and name and shows the physical location of each CRAY-1 S 12-column module. This chassis map is for CRI employees looking for specific CRAY-1 S 12-column chassis layout information.

HMM-0749 D The CRAY-1 A Chassis Map identifies modules by number and name and shows the physical location of each CRAY-1 A module. This chassis map is for CRI employees looking for specific CRAY-1 A chassis layout information.

HMM-0750 B The SSD Model A Chassis Map identifies modules by number and name and shows the physical location of each SSD module. This chassis map is for CRI employees looking for specific SSD chassis layout information.

HMM-0751 B The IOP Model B Chassis Map S/N 6, 11-20 identifies modules by number and name and shows the physical location of each IOS model B S/N 6, and 11-20 module. This chassis map is for CRI employees looking for specific IOS model B S/N 6, 11-20 chassis layout information.

HMM-0754 C The IOP Model B Chassis Map S/N 25-39 identifies modules by number and name and shows the physical location of each IOS Model B module. This chassis map is for CRI employees looking for specific chassis layout information.

HMM-0756 B The CRAY-1 M Chassis Map identifies modules by number and name and shows the physical location of each CRAY-1 M module. This chassis map is for CRI employees looking for specific chassis layout information.

HMM-0757 E The CRAY X-MP Chassis Map (12-column) identifies modules by number and name and shows the physical location of each CRAY X-MP 12-column module. This chassis map is for CRI employees looking for specific chassis layout information.

HMM-0783 02 The CRAY X-MP Computer Systems CPU Block Diagrams illustrate the interconnection and operation of all functional areas within the CRAY X-MP computer system. This manual is written for CRI field engineers who use it to isolate problems to the module level.

HMM-0801 C The CRAY X-MP Block Diagram Wall Chart illustrates the interconnection and operation of all functional areas within each CRAY X-MP central processing unit CPU. This chart is created for CRI field engineers who use it for isolating problems to the module level.

HMM-0804 F The CRAY X-MP/4 Chassis Map identifies modules by number and name and shows the physical location of each module. This chassis map is for CRI employees looking for specific CRAY X-MP/4 chassis layout information.

HMM-0805 E The CRAY X-MP/216 Chassis Map identifies modules by number and name and shows the physical location of each module. This chassis map is for CRI employees looking for specific CRAY X-MP/216 chassis layout information.

HMM-0809 The CRAY-1 S Series Computer Systems I/O Processor S/N 3-39 Instruction Timing Diagrams Hardware Maintenance Manual contains instruction timing diagrams for every instruction performed on the I/O processor (IOP) serial numbers 3-39 and is written for CRI field engineers. Each diagram includes module blocks containing appropriate terms and test points. Brief explanations of the instructions and Boolean definitions are also provided.

HMM-0813 The I/O Subsystem Model B S/N 21-24 Block Diagrams Hardware Maintenance Manual illustrates the interconnection and operation of all functional areas within the I/O subsystem model B, serial numbers 21-24. This manual is written for CRI field engineers who use it to isolate problems to the module level.

HMM-0816 01 The I/O Subsystem Model A S/N 8 Block Diagrams Hardware Maintenance Manual illustrates the interconnection and operation of all functional areas within the I/O subsystem Model A, serial number 8. This manual is written for CRI field engineers who use it to isolate problems to the module level.

HMM-0818 The I/O Subsystem Model B S/N 6, 11-20 Block Diagrams Hardware Maintenance Manual illustrates the interconnection and operation of all functional areas within the I/O subsystem model B, serial numbers 6 and 11-20. This manual is written for CRI field engineers who use it to isolate problems to the module level.

HMM-0821 The CRAY-1 S Computer Systems I/O Processor S/N 40 Instruction Timing Diagrams Hardware Maintenance Manual contains instruction timing diagrams for

every instruction performed on the I/O processor (IOP), serial number 40 and above, and is written for CRI field engineers. Each diagram includes module blocks containing appropriate terms and test points. A brief explanation of the instruction and Boolean definitions are provided.

HMM-0826 The I/O Subsystem Model B S/N 25-39 Block Diagrams Hardware Maintenance Manual illustrates the interconnection and operation of all functional areas within the I/O subsystem model B serial number 6 and 25-39. This manual is written for CRI field engineers who use it to isolate problems to the module level.

HMM-0827 02 The CRAY X-MP 12-column Computer Systems Instruction Timing Diagrams Hardware Maintenance Manual provides instruction timing diagrams for all instructions performed on the CRAY X-MP computer system (CPU-1) and is written for CRI field engineers. These diagrams only pertain to the 12-column CRAY X-MP S/N 101-114 computer system. This document is one of a set of maintenance manuals for the CRAY X-MP computer system.

HMM-0828 The I/O Subsystem Model B S/N 40- Block Diagrams Hardware Maintenance Manual illustrates the interconnection and operation of all functional areas within the I/O subsystem model B S/N 40-. This manual is written for CRI field engineers who use it to isolate problems to the module level.

HMM-0840 CRAY X-MP/48, 416 Computer Systems Instruction and Timing Diagrams.

HMM-0862 The CRAY X-MP/2,1 Computer Systems CPU Block Diagrams Hardware Maintenance Manual illustrates the interconnection and operation of all functional areas within CRAY X-MP/2,1 computer systems. This manual is written for CRI field engineers who need to isolate problems to the module level.

HMM-1003-0A CRAY-1 S/M/X-MP Computer Systems PMI/PMP Guidelines. Information is provided on mainframes, power distribution units, I/O processors, mass storage, refrigeration condensing units, motor generators, disk controllers, interfaces, displays, eclipses, tape drives, printers, card readers, and module test stations. This publication was revised to include previous change packet information on PPE treatment for control of fretting erosion, shock program test, command buffer contents, and precautions for handling modules, extenders, and torque tools. This printing makes the previous version obsolete.

HMM-2030 The CRAY-2 Computer Systems Block Diagrams Hardware Maintenance Manual contains a set of block diagrams and descriptions for the CRAY-2 computer system, the foreground processor, and the background processor.

HMM-2802 C The CRAY-2 Block Diagram illustrates the interconnection and operation of all functional areas within the CRAY-2 computer system. This chart is for CRI field engineers who need to isolate problems to the module level.

HN-02037 The Hardware Error Report Generator (HERG) Utility Technical Note describes the HERG utility and is written for CRI field engineers and analysts. The HERG utility runs as a batch job under the CRI operating system COS, release 1.12 and above. The HERG utility also reads the SYSTEMLOG files and outputs a listing of hardware errors.

HN-02044 The CRAY-2 Computer System Channel Interface Adapter (CIA) Technical Note describes the channel interface adapter board that can be installed in any computer that is IBM PC-compatible. The CIA allows a program in the PC to interact with the CRAY-2 foreground processor to provide deadstart, system status, and debug functions.

HO-00079 The IBM System 360/370 Interface Reference Manual is an IBM original equipment manufacturer (OEM) manual that describes the requirements of an IBM System/360 and System/370 I/O interface channel. This manual is written for programmers and field engineers and contains software protocol and other information necessary to design software for IBM channel control. The manual includes a functional description of interface lines, and electrical, mechanical, and cabling requirements. It also includes an operational description of the I/O interface channel.

HQ-00135 The DD-39 Information Handbook is a quick reference for information on the DD-39 disk storage unit (DSU). This manual is written for CRI field engineers, and includes DD-39 specifications, channel head grouping descriptions, and related circuit board descriptions of the field engineering drive and maintenance panels, channel function descriptions, and a spare parts listing.

HQ-01004 The CRAY-1 Computer Systems Diagnostic Ready Reference Guide provides condensed descriptions of Cray diagnostic test preamble documentation, and is written for CRI field engineers. Brief explanations of each command are provided.

HQ-02042 The CRAY-2 Computer System Off-line

Diagnostic Ready Reference Guide lists the on-line diagnostics used to test the CRAY-2 computer system. This publication is an exact duplication of the off-line diagnostic preambles produced by the CRI Diagnostic Systems department to aid field engineers in troubleshooting the CRAY-2 computer system. Brief explanations of each command are provided.

HR-00004 F The CRAY-1 Computer Systems Hardware Reference Manual describes the functions of CRAY-1 models A and B (serial number 3 and above) computer systems, the overall computer system, its configurations, and equipment. The manual also describes the operation of the CPU, which runs programs and user jobs, and oversees job flow within the CRAY-1 computer system.

HR-00028 A The CRAY X-MP Models 22 and 24 (12-column) Site Planning Reference Manual contains technical information to plan and prepare a site for installation of a CRAY X-MP computer system model 22 or 24. These models are dual-processor, 12-column systems with memories of 2- and 4-million words, respectively. This publication is written for the management and personnel installing the computer system.

HR-00029 A The CRAY-1 Computer Systems S Series Mainframe Reference Manual describes the functions of CRAY-1 S series computer systems, the overall computer system, its configurations, and equipment. It also describes the operation of the CPU, which runs programs and user jobs, and oversees job flow within the CRAY-1 S series computer system.

HR-00030 B The I/O Subsystem Hardware Reference Manual describes the operation of the CRI I/O subsystem (IOS). This publication is written to assist programmers and field engineers. The four sections of an I/O processor (IOP) described are the memory, control, computation, and I/O. Instructions and their formats, interface requirements to peripheral devices, and buffer memory to an IOS are also described.

HR-00079 A The Cray Data-streaming Interface Reference Manual describes the functions of the Cray data-streaming interface and is written to assist programmers who are familiar with digital computers, specifically Cray mainframes, Cray I/O subsystems, and IBM mainframes. This manual provides information necessary to design software for both IBM and Cray channel control.

HR-00080-0D D Cray Research Peripheral Equipment

Site Planning Reference Manual. The Cray Research Peripheral Equipment Site Planning Reference Manual is written primarily for customer site personnel responsible for installing peripheral equipment for a Cray Research, Inc. computer system. It contains information necessary to assist in the planning and preparation of a site prior to the peripheral equipment installation. This manual contains information about the installation process, the maintenance control group and workstation equipment, controllers and disk storage units, front-end interface communication devices, and maintenance test equipment.

HR-00082-0D D Cray Research Support Equipment Site Planning Reference Manual. This manual is intended for the customer and Cray Research management and personnel responsible for installing support equipment for a Cray Research, Inc. computer system. The manual contains technical information necessary to plan and prepare a typical site for this type of installation. The publication contains site planning information for the refrigeration condensing units (RCUs) and motor-generator sets (MGSSs).

HR-00084 A The CRAY X-MP (6-column) Site Planning Reference Manual (S/N 110, 115-131, 301-332) describes the installation process and the physical site requirements for the CRAY X-MP (6-column) computer system. The primary audience for this site planning manual is customers; the secondary audience includes CRI site installation personnel. This manual defines customer/CRI installation responsibilities and describes environmental specifications, floor preparations, system configurations, floor plan arrangements, piping/wiring requirements and equipment separation limits.

HR-00087 A The CRAY X-MP Series Model 48 Site Planning Reference Manual (S/N 201-) contains technical information to plan and prepare a site for installing a CRAY X-MP series computer system, model 48. This manual is written for management and personnel responsible for this installation.

HR-00089 The Cray Computer Systems Site Planning Templates Package (Standard) contains scaled U.S. standard templates to aid in the floor layout of a CRAY-1, CRAY X-MP, or CRAY-2 computer system.

HR-00092-0C The CRAY X-MP 8-column Computer System Site Planning Reference Manual (S/N 401-) contains technical information to plan and prepare a site for installing a CRAY X-MP 8-column computer system. This manual is written for management and personnel responsible for this

installation.

HR-00094 The Cray Computer Systems Site Planning Templates Package (Metric) contains scaled S.I. metric templates to aid in the floor layout of a CRAY-1, CRAY X-MP, or CRAY-2 computer system.

HR-00134 The Cray/CDC Interface Reference Manual describes the functions of the Cray/CDC interface and provides information necessary to design software for both CDC channel control and Cray channel control. The manual is written to assist programmers who are familiar with Cray mainframes, the Cray IOS, and CDC mainframes.

HR-00147-0A The CRAY Computer Systems Fiber-optic Link Functional Description Manual contains numerous informational and editorial changes. New information on the CRAY-2 fiber-optic link (FOL-3) is provided. This revision makes all previous printings obsolete.

HR-00306 The Safe Use and Handling of Fluorinert Liquids is written for CRI customers and field engineers whose Cray computer system uses Fluorinert liquid for cooling or testing. The manual introduces Fluorinert liquid, provides precautionary information on Fluorinert liquid, and describes its uses in Cray computer systems. The manual describes the material safety data sheet and explains its significance in using Fluorinert liquid or any other chemical.

HR-00630 E The CRAY-1 Mass Storage Subsystem Hardware Reference Manual contains operation and programming information for the DCU-2 and DCU-3 disk controller units and is written for CRI field engineers. Additional information and operating instructions for the DD-19 and DD-29 disk storage units is also provided.

HR-00802 B The CRAY-1 Series Computer Systems Site Planning Reference Manual contains technical information to plan and prepare a site for installing a new CRAY-1 S computer system. This publication is written for the management and personnel installing a CRAY-1 S computer system.

HR-02000-0D The CRAY-2 Computer Systems Functional Description Manual describes the configuration, functions, and characteristics of the CRAY-2 computer system and the Cray assembly language CAL version 2 symbolic machine instructions. This manual has been revised to incorporate the vector tailgating and shared register enhancements. Various technical corrections and the

previous change packet, 01, have also been included.

HR-02001 B The CRAY-2 Site Planning Reference Manual (S/N 2001 and above) describes the installation process and the physical site requirements for the CRAY-2 computer system. The primary audience for this site planning manual is customers; the secondary audience includes CRI site installation personnel. This manual defines customer/CRI responsibilities and describes environmental specifications, floor plan arrangements, and equipment separation limits. Revision B updates the CRAY-2 system configuration. Room heat loading, power wiring, and weight specifications have also changed. Information on the CRAY-2 module test station and module repair station was deleted from this manual. This information is now in the Cray Peripheral Equipment Site Planning Reference Manual, publication number HR-00080-0C.

HR-03005 The CRAY X-MP Computer Systems Functional Description Manual describes basic information on the computation section, exchange mechanism, functional units, and symbolic machine instructions on the CRAY X-MP computer system. The primary audience for this functional description manual is customers of the CRAY X-MP computer system. A secondary audience includes CRI personnel desiring an overview of the CRAY X-MP computer system. The information in this manual only applies to current CRAY X-MP models. A fact sheet describing each model's specific details is also included.

HR-03008 The CRAY X-MP/14se Site Planning Reference Manual contains specific site planning information for the CRAY X-MP/14se mainframe chassis, the mainframe chassis power distribution unit (PDU), and the auxiliary refrigeration condensing unit. This manual is written for the management and personnel responsible for installing the CRAY X-MP/14se computer system.

HR-03017 The CRAY X-MP EA/se 6-column Computer System Site Planning Reference Manual contains specific site planning information for the CRAY X-MP EA/se 6-column mainframe chassis, the mainframe chassis power distribution unit, and the refrigeration condensing unit. This manual is written for the management, customers, and personnel responsible for installing the CRAY X-MP EA/se 6-column computer system.

HR-03018 The CRAY X-MP EA 8-column Computer System Site Planning Reference Manual contains specific site planning information for the CRAY X-MP EA 8-column mainframe chassis, the I/O subsystem chassis (IOC), the SSD solid-

state storage device, and power distribution units. This manual is written for the management, customers, and personnel responsible for installing the CRAY X-MP EA 8-column computer system.

HR-03019 The CRAY X-MP EA 12-column Computer System Site Planning Reference Manual contains specific site planning information for the CRAY X-MP EA 12-column mainframe chassis, the I/O subsystem chassis (IOC), the SSD solid-state storage device, and power distribution units. This manual is written for the management, customers, and personnel responsible for installing the CRAY X-MP EA 12-column computer system.

HR-03020 The CRAY X-MP EA Computer System Functional Description Manual describes all components of the CRAY X-MP EA computer system. The manual contains the following tabbed sections: System Overview, Mainframe Architecture and CPU Instructions, I/O Subsystem, SSD Solid-state Storage Device, Peripheral Equipment, and Software Overview. Specification sheets are included for the mainframes, IOS, SSD, and peripheral equipment. These sheets describe each model in detail. This manual is written primarily for customers; a secondary audience includes CRI personnel requiring an overview of the Cray extended architecture computer systems.

HR-03020-01 The CRAY X-MP EA Computer Systems Functional Description Manual Change Packet describes the basic functional design and architecture of the CRAY X-MP EA computer system and its associated peripheral devices manufactured by Cray Research, Inc. This change packet includes these new hardware features in the specification sheets:

The OWS now has a dedicated low-speed channel in the MIOP. The CRAY X-MP EA/14se clock speed has changed from 10.0 ns to 8.5 ns. The DS-40 disk subsystem now has daisy-chaining capabilities.

HR-04000-0A The CRAY Y-MP8 Computer Systems Site Planning Reference Manual describes installation and physical site requirements for the CRAY Y-MP8 computer system. Revision A covers mainframes with S/Ns 1010, 1014, 1016, and up. The primary audience for this site planning manual is customers; the secondary audience is CRI site installation personnel. This manual defines customer and CRI installation responsibilities and describes environmental specifications, floor preparations, system configurations, floor-plan arrangements, piping/wiring requirements, and equipment -separation limits.

HR-04001-0C CRAY Y-MP Computer Systems
Functional Description Manual. Describes the basic
functions of the CRAY Y-MP computer system. The manual is
written primarily for customers, and describes the design
and architecture of the system and its associated peripheral
devices. This revision incorporates change packet HR-04001-
0B1. A description of the new DS-41 Disk Subsystem has been
added to Section 5. All of the CRAY Y-MP specification
sheets were updated and new specification sheets for the
FOL-3 fiber-optic link and DS-41 were added. Numerous
technical and editorial changes were also made.

HR-04002 The CRAY Y-MP2 Computer Systems
Site Planning Reference Manual describes installation and
physical site requirements for the CRAY Y-MP2 computer
system. The primary audience for this site planning manual
is customers; the secondary audience is CRI site
installation personnel. This manual defines customer and
CRI installation responsibilities and describes
environmental specifications, floor preparations, system
configurations, floor-plan arrangements, piping/wiring
requirements, and equipment-separation limits.

HR-04003 The CRAY Y-MP4 Computer Systems Site
Planning Reference Manual describes installation and
physical site requirements for the CRAY Y-MP4 computer
system. The primary audience for this site planning manual
is customers; the secondary audience is CRI site
installation personnel. This manual defines customer and
CRI installation responsibilities and describes
environmental specifications, floor preparations, system
configurations, floor-plan arrangements, piping/wiring
requirements, and equipment-separation limits.

HR-04013 Principles of Computer Room Design.
This manual describes computer room design principles to
help computer room facility managers prepare, inspect, and
maintain a stable, problem-free environment. Information on
computer room and raised floor construction, system cooling,
environmental control, fire and lightning protection, power,
and grounding are also discussed.

HR-04015-0A CRAY Y-MP2E and CRAY Y-MP4E Site
Planning Reference Manual. This manual describes the site
planning requirements and suggestions for the CRAY Y-MP2E
and CRAY Y-MP4E computer systems. This manual provides
information about the complete site planning and preparation
process and the operational requirements for each computer
system. This manual also provides information about
individual computer system configurations, specifications,
electrical and cooling requirements, separation limits, and

floor preparation. This site planning manual is written for customers and Cray Research installation personnel.

HR-04016-0A CRAY Y-MP E Series Functional Description Manual. The CRAY Y-MP E Series Functional Description Manual describes the basic functions of a CRAY Y-MP E series computer system. The manual is written primarily for customers. It describes the architecture of the mainframe, IOS, SSD, and peripheral devices. A software overview is also included. This revision incorporates all previous change packets and adds information about the CRAY Y-MP8E, CRAY Y-MP8I, and CRAY Y-MP4E computer systems. The manual title now indicates that the manual includes all E series systems. Information about the TCA-1 channel adapter and SSD model E is also added.

HR-04022 CRAY Y-MP8E and CRAY Y-MP8I Site Planning Reference Manual. This manual describes the site planning requirements and suggestions for the CRAY Y-MP8E and CRAY Y-MP8I computer systems. This manual provides information on the complete site planning and preparation process and the operational requirements for each computer system. This manual also describes individual computer system configurations, specifications, electrical and cooling requirements, separation limits, and floor preparation. This site planning manual is written for customers and Cray Research installation personnel.

HR-04023 CRAY XMS Computer System Site Preparation and Installation Manual. This document describes the site preparation and installation process and physical requirements for CRAY XMS computer system sites. Specific information on operational requirements, system configurations, the mainframe chassis, and equipment separation limits is also provided in this manual. Procedures for the hardware installation are also included. This manual is written for customers and site installation personnel.

HR-04024 RDC-5 Operating Procedures. The RDC-5 Operating Procedures quick reference card is an operating procedures card written primarily for customer operators. It provides procedures for powering on and off the RDC-5, powering on and off the individual RD-1 drives, removing and inserting the RD-1 drive, and setting the RD-1 write protect switch. The card also includes information about the RD-1 control panel switches and indicators.

HR-04025 CRAY Y-MP C90 Site Planning Reference Manual. This manual contains site planning requirements and suggestions for the CRAY Y-MP C90 computer

system. It includes information about the site planning and preparation process, operational requirements, system configurations, specifications, floor preparation, power and cooling requirements, and preparation checklists. The devices described in this manual include the mainframe chassis, IOS/SSD chassis, heat exchanger units (HEU-C90 and HEU-E/S), refrigeration condensing units (RCU-5 and RCU-6), motor-generator set (MGS-6), and peripheral equipment.

HR-04026 Preparing Your Site for a CRAY Y-MP EL Installation. This manual contains the technical information necessary to plan and prepare a site for the installation of a CRAY Y-MP EL system. This manual contains the information included in a traditional site planning manual, such as wiring, power consumption, grounding, and access requirements. The name and format of the manual have been changed to reflect the fact that the CRAY Y-MP EL computer system is easy to install and can be located in any office environment.

HR-04027 CRAY Y-MP EL Functional Description. This manual is a functional overview of the CRAY Y-MP EL system and is written primarily for customers and persons who desire introductory information about the system. It describes the architecture of the mainframe and optional peripheral cabinets.

HR-04027-001 CRAY Y-MP EL Functional Description Change Packet. The CRAY Y-MP EL Functional Description Change Packet updates the DAS-2 disk array subsystem transfer-rate information contained in the original manual, HR-04027.

HR-04028 CRAY Y-MP C90 Functional Description Manual. This manual describes the basic functions, design, and architecture of the CRAY Y-MP C90 computer system and its associated peripheral devices. This manual is written primarily for Cray Research customers.

HR-04030 CRAY Y-MP M90 Series Functional Description Manual. This manual describes the basic functions, design, and architecture of CRAY Y-MP M90 series computer systems and their associated peripheral devices. This manual is written primarily for Cray Research customers. The manual contains sections describing the basic functions of the mainframe, IOS, SSD, and peripheral devices. An overview of system software, a description of the UNICOS operating system, and a summary of the mainframe instructions are also included.

HR-04030-001 CRAY Y-MP M90 Series Functional

Description Manual Change Packet. This change packet incorporates new information on the DD-62 disk drive, the RD-62 removable disk drive, and the RDE-6 disk enclosure. The index for this manual was not updated with this change packet.

HR-04031 CRAY Y-MP M90 Series Site Planning Reference Manual. This manual describes the site planning requirements for the CRAY Y-MP M90 series computer systems. The computer systems included in the M90 series are the CRAY Y-MP M92, CRAY Y-MP M94, and CRAY Y-MP M98 single-cabinet, and CRAY Y-MP M98 two-cabinet systems. This manual provides information on the complete site planning and preparation process and the operational requirements for each computer system. This manual also describes individual computer system configurations, specifications, electrical and cooling requirements, separation limits, and floor preparation. This site planning manual is written for customers and Cray Research installation personnel.

PRN-0889 6 The FEI-3 Hardware Installation Engineering Note is a guide to installation of the Cray FEI-3 in a VMEbus subrack. A generic description is provided, with references to specific applications in separate appendices.

PRN-8890 The DCUS1 Disk Controller Engineering Note describes hardware design, operation and programming of the DCUS1 disk control unit.

PRN-0901 The CRAY DA10 Disk Array System Engineering Note describes the CRAY DA10 disk array system. Different sections are devoted to specifications, configuration, operation, and programming of the system. Revision 3, 4/1/89.

PRN-0902 3 The CRAY Y-MP Control System RS232 Serial Port Programming Engineering Note contains information for programming the CRAY X-MP control system RS232 port.

PRN-0905 1 The CRAY X-MP/CRAY X-MP EA Exchange Package and Error Addressing Comparison Engineering Note describes and compares exchange package and error reporting formats between CRAY X-MP and CRAY X-MP EA systems.

PRN-0906 The CRAY RDS-5 Removable Disk System Engineering Note describes the Cray RDS-5 removable disk system. Diagrams, tables, and text describe system configuration, specifications, and operation. Revision 2,

3/1/89.

SMM-01011 B The CRAY Y-MP, CRAY X-MP EA, CRAY X-MP, and CRAY-1 Computer Systems COS On-line Diagnostic Maintenance Manual (available through the Distribution Center in Mendota Heights, Minnesota) describes the on-line tests and utilities that run under the Cray Research operating system (COS), release 1.17.2 on the CRAY Y-MP, CRAY X-MP EA, CRAY X-MP, and CRAY-1 computer systems. This manual is for CRI service personnel. The manual includes a CPU confidence test and monitor overview, CPU confidence test descriptions, I/O confidence test descriptions, CPU maintenance test and monitor overview, down device test, I/O subsystem deadstart and online program descriptions, and utility program descriptions.

SMM-01012 F The CRAY Y-MP, CRAY X-MP EA, and CRAY X-MP Computer Systems UNICOS On-line Diagnostic Maintenance Manual (available through the Distribution Center in Mendota Heights, Minnesota) describes the on-line tests and utilities that run under the Cray Research UNICOS operating system, release 6.1 on the CRAY Y-MP, CRAY X-MP EA, and CRAY X-MP computer systems. This manual is for CRI field engineers and analysts. This manual is organized so that the diagnostic tests are grouped by the hardware tested. (CPU, disk, IOS, networks, and tape). In addition, the manual includes sections about the olpha and runsequence programs.

SPM-1012 G CRAY Y-MP, CRAY X-MP EA, and CRAY X-MP Computer Systems UNICOS On-line Diagnostic Maintenance Manual. The CRAY Y-MP, CRAY X-MP EA, and CRAY X-MP Computer Systems UNICOS On-line Diagnostic Maintenance Manual describes the on-line diagnostic tests and tools that run under the Cray Research UNICOS operating system, release 7.0, on CRAY Y-MP C90, CRAY Y-MP, CRAY X-MP EA, and CRAY X-MP computer systems. This manual is intended for CRI customer service personnel. The manual is organized so that the diagnostic tests are grouped by the hardware tested (CPU, disk, IOS, networks, and tape). In addition to the diagnostic tests, the manual includes sections on the olhpa and runsequence utility programs. (Order from Distribution.)

SMM-01016 B The OLNET On-Line Diagnostic Network Communications Program Maintenance Manual (available through the Distribution Center in Mendota Heights, Minnesota) describes the on-line environment for OLNET under the Cray operating system (COS), release 1.17.2 on the CRAY Y-MP, CRAY X-MP EA, CRAY X-MP, and CRAY-1 computer systems; under the IBM MVS and VM operating systems; and under the UNIX System V operating system on Sun workstations. This manual

is written for CRI service personnel. The manual describes the OLNETH program, which detects and isolates faults in the communications link between a Cray Research computer system and a front-end computer system.

SMM-02028 E The CRAY-2 Computer System UNICOS On-line Diagnostic Maintenance Manual (available through the Distribution Center in Mendota Heights, Minnesota) describes the on-line tests and utilities that run under the Cray Research UNICOS operating system, release 6.0 on the CRAY-2 computer system. This manual is written for CRI service personnel. The manual includes a CPU confidence test and monitor overview, CPU confidence test descriptions, I/O confidence test descriptions, a maintenance test and monitor overview, down-device test descriptions, and utility program descriptions.

SMM-1023 The CRAY XMS Computer System On-line Diagnostic Maintenance Manual (available through the Distribution Center in Mendota Heights, Minnesota) describes the on-line diagnostic tests and tools that run under the Cray Research UNICOS operating system, release 5.1, on CRAY XMS computer systems. This manual is for CRI service personnel.

SP-02020 The CRAY-2 Foreground Processor Reference Manual describes the CRAY-2 monitor structure, background processor interface, foreground processor drivers and macros, and provides a configuration of the CRAY-2 computer system foreground processor.

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