REV	REVISIONS DESCRIPTION	DATE	APPROVED
1	ENG REL PER ERC E0214E	10/20/82	YY

ENGINEERING RELEASED

PN-C024623

		DRAWN BY / DATE	C U-1/12 10/20/83
		CHECKED	10-20-83
NEXT ASSY	USED ON	ENGINEER	10/20/83
		APPROVED	
		APPROVED	

ATARI®

Atari, Inc.
30 E. Plumaria Drive
San Jose, CA 95134

A Warner Communications Company

TITLE SWEETPEA PROD. SPEC.

SIZE	DRAWING NO.	REV
A	C024623	1

SCALE | SHEET 1 OF 22

C024623
PRODUCT SPECIFICATION
SWEETPEA
CONTENTS

6/14/83

C024623
PRODUCT SPECIFICATION
SWEETPEA
CONTENTS

1.0 PRODUCT DESCRIPTION AND ASSUMPTIONS

1.1 Product Description

Sweetpea is an inexpensive peripheral device for the Atari home computer family. It will provide a cost effective means for the execution of programs designed to run under the CP/M[r] operating system. Sweetpea will attach to the SIO bus of the computer, and interact with either a TV via the RF modulator on the Atari computer, or an optional 80 column video monitor that can be plugged into the back of the Sweetpea unit.

1.2 Assumptions

1.2.1 Product Reasoning

This product is intended to add a strategic marketing dimension to our home computer line by providing CP/M[r] capability.

1.2.2 Application Software

Atari will provide no aplication support for this unit, but will rely on an outside vendor to make available compatible software. This vendor's catalog will be included with the unit as it is shipped to the customer, and will be contractually required to provide this support.

The minimum set of titles required in the catalog will be specified by Atari marketing.

1.2.3 Electrical/Software Development

Due to the time constraints and the relatively limited volumes (20K/yr), we will be licensing an existing electrical and firmware design for this product from an outside company.

Atari will develop the PCB, packaging, etc, in-house.

1.2.4 Manufacturing

The Sweetpea unit will be manufactured by Atari Wong.

ATARI
Atari, Inc.
30 E. Plumaria Drive
San Jose, CA 95134
A Warner Communications Company

SIZE	DRAWING NO.	REV
A	C02463	1
SCALE		SHEET 6 OF 22

2.0 STRATEGIC FIT

This product is intended to broaden Atari's image as a complete computer supplier. This is done by offering the Sweetpea option which provides the user with many 'professional' type programs. This product will be compatible with the existing computer line, and will enhance its attractiveness to some of the more sophisticated users.

ATARI®
Atari, Inc.
30 E. Plumaria Drive
San Jose, CA 95134
A Warner Communications Company

SIZE	DRAWING NO.	REV
A	C024623	1
SCALE	SHEET 7 OF 22	

3.0 FUNCTIONAL REQUIREMENTS

3.1 Minimum hardware Requirements

3.1.1 Processor

Sweetpea will incorporate a Zilog Z80 or equivalent microprocessor. The system will run with no wait states during RAM memory accesses.

3.1.2 Memory

Sweetpea will have a minimum of 64 Kbytes of RAM. Up to 2 Kbytes of that memory may be reserved for video display memory.

The unit will also include 4 Kbytes of ROM that will occupy addresses 0000H - 4000H. This ROM may additionally be enabled or disabled by writing an I/O port. When the ROM is enabled for processor reads, the underlying RAM is still available for processor writes.

3.1.3 Video Display Generation

The Sweetpea unit will include the necessary circuitry to generate 80 X 25 character displays on an optional video monitor. Quarter cell and form drawing graphics will also be available in this mode. Up to 2 Kbytes of the memory address space may be devoted to the video display RAM. Processor memory accesses may not cause any disturbances in the video display.

3.1.4 SIO Interface

Sweetpea will have the capability of interfacing to devices on the SIO bus. This will include the capability of parallel-to-serial and serial-to-parallel conversions. The design will be such that the Sweetpea unit will not have to be the last device on the SIO bus (i.e. there will be two SIO connectors on the unit).

3.1.5 Appearance

The Sweetpea unit will be styled to be compatible with the 1050 disk drive.

ATARI®
Atari, Inc.
30 E. Plumaria Drive
San Jose, CA 95134
A Warner Communications Company

SIZE	DRAWING NO.	REV
A	C024623	1
SCALE	SHEET 8 OF 32	

3.1.6 Environmental

The following represent the enviromental goals of the Sweetpea unit.

	Operating	Storage
Temperature (^{O}F)	32^{O} - 104^{O}	40^{O} - 158^{O}
Relative Humidity (non-condensing)	20% - 85%	5% - 95%
Shock & Vibration	< 0.3 G	< 3 G

ATARI
Atari, Inc.
30 E. Plumaria Drive
San Jose, CA 95134
A Warner Communications Company

SIZE	DRAWING NO.	REV
A	CO24623	1
SCALE		SHEET 9 OF 22

3.2 Minimum Software Requirements

3.2.1 CP/M[r] Software Requirements

Sweetpea will run the Digital Research CP/M[r] 2.2 Operating System. BIOS source code will be provided for at least the character oriented devices to permit customization by the sophisticated user. the souce coee provided must be in 8080 mnemonics, capable of being assembled by the standard Digital Research CP/M[r] 2.2 assembler. Z80 code may be used by inserting DB bytes with the desired Z80 operations in comments. A cusomization utility will be provided to support the average user with available relevant SIO and PBI devices.

3.2.2 Display Capability

The Sweetpea unit will have a terminal configuration menu for selecting which display device will be used and what type of display format, if the Atari TV is used. Other options in this menu will include the color and intensity selections of the text and background on the TV.

This menu is accessed by hitting the OPTION key. It is desireable to have to do this configuration only the first time the CP/M diskette is used, and to have the configuration information sfored on the diskette for future reference. The default device for display on the first power up of the system is the TV connected to the Atari computer.

3.2.2.1 Atari Terminal Display Mode

The Atari Home Computer that is connected to Sweetpea can be expected to serve as the CP/M[r] terminal in a large number of the installations. It will provide an emulation of the cursor and screen control codes of the DEC VT52 terminal. Additionally, it will provide the reverse video and character graphics of the Heath H19.

Optionally, depressing and holding the SHIFT and SELECT keys will will show the last 24 lines scrolled off the screen.

3.2.2.1.1 40 Column Mode

In this mode, the terminal emulation will provide an automatic carriage return after 40 characters on a line (presuming the 41st character is not CR).

3.2.2.1.2 80 Column Emulation

The Sweetpea CP/M[r] software will provide two different implementations of

providing an 80 column screen on the 40 column Atari display.

The most straight forward 80 column screen will give the user two 40 column screen halves that can be displayed. The display can be toggeled between the left (normal) half and the right half of lthe 80 column lines by depressing the SHIFT and START keys simultaneously.

The second technique of handling the 80 columns is one that causes the cursor to remain visible on the display screen at all times. The entire display window is smoothly scrolled horizontally to accomplish this. Any horizontal motion of the cursor causes the terminal emulation software to ensure that the cursor is on the screen.

While the cursor is stationary, the user may smooth scroll his display window to the right by pressing the SELECT key, or smooth scroll to the left by pressing the START key

3.2.2.1.3 80 Column TV Mode

The Sweetpea unit will have the ability to display 80 columns at a time on the TV by the use of a redefined character set. This mode will be readable only with the appropriate selection of the screen colors, and with the use of a relatively high quality TV.

3.2.2.2 80 Column Monitor Interface

The Sweetpea video monitor interface will also emulate the control codes of the VT52 and as many of the additional H19 features as the hardware will permit. Sweetpea should include quarter cell character graphics and some minmal form drawing characters. The terminal BELL should be implemented by the host Atari computer.

3.2.3 Disk Support

The Sweetpea CP/M[r] implementaition will support diskettes formatted in both the Atari 810 and Atari 1050 formats. The BIOS should automatically determine the density of each disk inserted in a 1050 before the first access following each CP/M[r] disk reset function.

The logical to physical sector skew will be set to provide optimal performance.

If a non-existant logical disk drive is selected as the default drive the BIOS will set drive A as the default drive.

3.2.3.1 Atari 810/1050 Disk Interface

The Sweetpea BOIS will support both single and double density disks. When a 1050 drive is used, it will be possible to use that drive for both diskette densities.

3.2.3.2 Atari 1450XLD Parallel Bus Disk Interface

If there are any parallel bus disk drives in the system, such as the drive internal to the 1450XLD, those disk drives will have the lowest unit numbers.

3.2.3.3 Logical to Physical Disk Mapping

For a large number of programs, it is necessary to have two or more disk drives. A large percentage of the Sweetpea consumers can be expected to have only one physical disk drive. While not as convenient as actually having more physical drives, the Atari BIOS implementation will permit the one drive user some of the advantages of having more drives. Regardless of how many drives are connected to the system, the BIOS creates four "logical" disk drives. If the user has four physical drives, the mapping is the obvious one. For some systems with fewer drives, non-existant "drives" will be mapped onto existing units.

Whenever a non-existant physical drive is referenced, the system will determine which disk is currently occupying the mapping unit. If it is the appropriate logical disk, the operation can proceed. If it is not the correct disk for this operation, the user will be prompted to put in the correct disk in the drive, and to press RETURN before the disk is accessed.

3.2.4 Atari 850 RS-232C Interface

If no parallel bus modem exists, port 1 of the Atari 850 will be the default reader and punch device.

3.2.5 Printer Interfaces

The default list device will be one of the new line of Atari printers which connect directly to the SIO bus. If no SIO printer is connected, the list device will default to the Centronics printer port on the Atari 850. The configuration utility should provide the means of changing the BIOS to use a serial printer connected to one of the 850 serial lines using either CTL-S/CTL-Q or CTS handshaking.

3.2.6 Disk Utilities

The Sweetpea SW will supply the following disk utilities:

DISKCOPY - CP/M[r] utility to permit the user to duplicate and verify diskettes which can be used on single or multiple disk drives systems.

FILECOPY - CP/M[r] utility to permit the user to copy files from one disk to another.

FORMAT - CP/M[r] utility to permit the initialization of a diskette on any of the supported disk devices, and in the format of any of the different formats.

3.2.7 Application Software

This product will use the existing base of CP/M[r] software. A software catalog of titles available, supplied by the developer of the initial HW and firmware designs, will be included in every Sweetpea box.

3.2.8 Wide Screen Output device for the Atari Computer

It would be desireable for programs running in the Atari computer to be able to use the video monitor output capability of the Sweetpea unit to achieve an 80 column (or 64 column) display.

4.0 FUTURE ENHANCEMENTS

4.1 Future Hardware Enhancements

There are currently no planned future hardware enhancements.

4.2 Future Software Enhancements

There are currently no planned future software enhancements.

ATARI®
Atari, Inc.
30 E. Plumaria Drive
San Jose, CA 95134
A Warner Communications Company

SIZE	DRAWING NO.	REV
A	CO24623	1
SCALE		SHEET 14 OF 22

5.0 SERVICE REQUIREMENTS

5.1 MTBF

This product will have a Mean Time Between Failures of 4,000 hours. For verification of MTBF procedures, refer to reference document "Qualification of Atari HCD Procured Products (8C-01A-30)".

5.2 Quality

The Average Outgoing Quality Level shall be 99.5% operational and free of defects. This is measured using reference document "Qualification of Atari HCD Procured Product".

5.3 Maintainability

The MTTR shall be determined for two modes of repair:

Mode 1) Major subassemble swap-out not to exceed 0.3 hrs.

Mode 2) Component level repair not to exceed 0.6 hrs.

There will be no owner repair necessary.

All repair will be done at a service center by trained servicemen with diagnostic aids, maintenance manuals, tools and spare parts available.

Repair to be completed by replacing subassemblies and/or components.

5.4 Spare Parts

There will be enough spare parts to cover 10% of the first six months of international production. These parts will be delivered to customer product service thirty days prior to product shipment.

5.5 Repair manual

A complete repair manual, symptom checklist, theory of operation, and schematic diagrams will be available to Customer Product Service.

5.6 Diagnostics

ATARI
Atari, Inc.
30 E. Plumaria Drive
San Jose, CA 95134
A Warner Communications Company

SIZE	DRAWING NO.	REV
A	CO24623	1
SCALE		SHEET 15 OF 22

Diagnostics and test procedures for service at regional and/or country service centers and servicing dealers will be available to Customer Product Service thirty days prior to product shipment.

6.0 COST TARGETS

6.1 Target Standard Costs

The targeted standard cost for this unit is $124.

ATARI®
Atari, Inc.
30 E. Plumaria Drive
San Jose, CA 95134
A Warner Communications Company

SIZE	DRAWING NO.	REV
A	CO24623	1
SCALE		SHEET 16 OF 22

7.0 CRITICAL TIMING REQUIREMENTS

Since the product has been shown at the June CES, it is very important that this unit is turned into a real product ASAP, and is available for shipments early next year. All aspects of the development process need to be addressed in a timely manner.

ATARI
Atari, Inc.
30 E. Plumaria Drive
San Jose, CA 95134
A Warner Communications Company

SIZE	DRAWING NO.	REV
A	CO24623	1
SCALE		SHEET 17 OF 22

8.0 COST, AVAILABILITY FUNCTIONS

The desired product cost to Atari is $124, with a resulting retail price of $300 - $400.

ATARI
Atari, Inc.
30 E. Plumaria Drive
San Jose, CA 95134
A Warner Communications Company

SIZE	DRAWING NO.	REV
A	CO24623	1
SCALE		SHEET 18 OF 22

9.0 PHYSICAL AND PACKAGING REQUIREMENTS

9.1 Physical Appearance

The Sweetpea unit should be housed in a plastic enclosure with its outline meeting Atari mechanical engineering industrial design specifications. These specifications will be such that the appearance of the unit is compatible with the XL family of Atari computers. It is very desireable that the Sweetpea unit be stackable with the 1050 disk drive.

9.2 Inner Packing

The inner packing must protect the Sweetpea unit and accessories from 10 drops from 24 inches on any one of six surfaces, three edges radiating from one corner without any internal damage. the inner packing must also protect the Sweetpea unit and accessories from vibrations of 30 minutes each, 2 directions 90 degrees apart, 100 - 300 cycles per minute. Package must leave surface 0.06 inches at some time. Again, no internal damage is allowed.

It is recommended that the Sweetpea unit and accessories be fully encapsulated in EPS foam or similar material. The foam enclosure should be of 2 piece construction, i.e. top and bottom, with minimum wall thickness of 0.75 inches. External dimensions will be determined by Atari packaging engineering.

9.3 Display Carton

It should be a six sided 24 pt. SBS (white chipboard) folding carton, printed in 4 colors plus PMS877 silver, wth UV or other abrasion resistant coating. All graphics will be specified by Atari. Dimensional aspects of carton are to specified by Atari.

The graphics on the display carton will also include the Digital Research user software agreement. This will be done so that tne user can choose not to purchase tne unit if he/she does not agree to tne conditions specified.

9.4 Shrink Wrap

The fully packaged product will be shrink wrapped to prevent damage and pilferage.

9.5 Shipping Carton

The weight and type of corrugate as well as the number of products per

shipping carton are to be specified by Atari.

ATARI®
Atari, Inc.
30 E. Plumaria Drive
San Jose, CA 95134
A Warner Communications Company

SIZE	DRAWING NO.	REV
A	CO24623	1
SCALE	SHEET 20 OF 22	

9.6 Package Contents

* Sweetpea subsystem
* Sytem I/O cable, 3 feet in length, with 13 pin connectors
* Owner's manual with warrenty material
* Catalog of available SW (to be supplied by Addon Co.)
* AC power adapter
* Diskettes with CP/M® operating system
* CP/M® Command Summary (artwork supplied by Digital Research)
* Atari product catalog

9.7 PRODUCT NAME

The Sweetpea unit's official Atari name will be Atari® CP/M® Add-On®.

ATARI®
Atari, Inc.
30 E. Plumaria Drive
San Jose, CA 95134
A Warner Communications Company

SIZE	DRAWING NO.	REV
A	CO24623	1
SCALE		SHEET 21 OF 22

10.0 MANUAL REQUIREMENTS

10.1 Owner's Manual

The owner's manual should have no more than 30 pages, and will be 5 1/2" X 8 1/2" in size.

The Owner's Manual should contain the following information:

* Unpacking instructions
* How to connect the Sweetpea unit to compatible Atari home computer systems.
* Power up instructions and operation with other peripherals.
* Instructions for user operable and accessable switches.
* How to insert and remove diskettes
* How to load CP/M® diskette.
* A user level trouble shooting section with a table which list and illustrates observable malfunction symptoms and suggested remedies.
* Factory servicing information and warrenty information/return card.
* Appropriate FCC warning statements of EMI/RFI effects.

10.2 CP/M Command Summary Guide

This manual will be the standard Digital Research Inc. manual. Atari has obtained reprint rights, and will supply suitable artwork.

ATARI®
Atari, Inc.
30 E. Plumaria Drive
San Jose, CA 95134
A Warner Communications Company

SIZE	DRAWING NO.	REV
A	CC024623	1
SCALE	SHEET 22 OF 22	