

Tandon and the 1450XLD, May 1983

The document itself begins on the next page.

Document source:

Original backup tapes owned by Dutchman2000, obtained by Atarimania.

Documentary research and PDF layout by Laurent Delsarte.

Note that these backup tapes contain A LOT of information spread out in many folders, meaning it will take time to process the important bits.

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Comments:

All the documents included here have one thing in common: they all relate to the joint work between Atari and Tandon to prepare a floppy-disk drive controller for the forthcoming Atari 1450XLD. Some are specific emails; others are weekly or monthly reports that generally cover several topics, including Tandon and the Atari 1450XLD.

In invite you to pay particular attention to the following points:

1. It was a very difficult and tedious task. This work was continuing even though some important decisions regarding the specifications had not yet been made.
2. The finding that a "boot screen" is required. The user must NOT be asked to power on the computer – including its integral floppy disk drive – with a disk in the drive.
3. The mention of an SIO retro-compatible mode – reducing transfer speed – so as to be compatible with specific protected non-Atari games
4. The existence of DIAGNOSTIC commands (\$23/\$24).

The purpose of publishing these documents is to provide a better understanding of the history of Atari's 8-bit computers. Consequently, some private or very personal information have been concealed/redacted.

Obvious spelling mistakes and typos have been corrected.

Additions by Laurent Delsarte are indicated by [and].

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1983 Calendars¹

May 1983							
No.	Su	Mo	Tu	We	Th	Fr	Sa
18	1	2	3	4	5	6	7
19	8	9	10	11	12	13	14
20	15	16	17	18	19	20	21
21	22	23	24	25	26	27	28
22	29	30	31				

June 1983							
No.	Su	Mo	Tu	We	Th	Fr	Sa
22				1	2	3	4
23	5	6	7	8	9	10	11
24	12	13	14	15	16	17	18
25	19	20	21	22	23	24	25
26	26	27	28	29	30		

July 1983							
No.	Su	Mo	Tu	We	Th	Fr	Sa
26						1	2
27	3	4	5	6	7	8	9
28	10	11	12	13	14	15	16
29	17	18	19	20	21	22	23
30	24	25	26	27	28	29	30
31	31						

¹ Source: <https://www.calendar-365.com/1983-calendar.html>

Foreword – US Cultural background

[Note from Laurent Delsarte] For readers who – like me – weren't born in the USA, this page provides a few explanations that are necessary to understand some of the cultural or technical references, subtleties or abbreviations found in the documents.

July 4th is a public holiday in the United States. It's known as "Independence Day", commemorating the adoption of the Declaration of Independence (July 4th 1776). It is celebrated nationwide with events such as fireworks, parades, and family gatherings.

[Human Resources] A **requisition** (abbreviated: **req.**) is an internal request to create or fill a job opening. Typical elements of a job requisition include: position details, justification, approval workflow, compensation range and timeline.

[Human Resources] An **EAR** most often stands for **Employee Action Request**. An Employee Action Request is a formal, signed paperwork that authorizes a change affecting an employee's workspace, equipment, or job-related assignment.

[Technical] An **ERS** or **External Reference Specification** serves several key purposes: define interfaces, specify protocols & data formats, document functional expectations, provide a contract for external partners, facilitate certification and compliance and serve as a reference for future revisions.

In short, an ERS is the blueprint that ensures everyone – engineers, manufacturers, partners, and eventually customers – have a common, precise understanding of how a product will externally behave and interoperate. It reduces risk, streamlines integration, and helps the company deliver reliable, market-ready hardware in a fast-moving, standards-driven era.

[Technical] A **PPR** or **Product Problem Report** is a formal record of a defect, non-conformance, or usability issue that have been discovered in a piece of hardware or software during testing, field use, or customer support.

[Technical] An **UART** or **Universal Asynchronous Receiver/Transmitter** – is a hardware component that handles asynchronous serial communication. In plain terms, it converts data between parallel (inside the computer) and serial (over a wire) formats.

[Technical] A **PCB** or **Printed Circuit Board** is the flat, insulated substrate on which the electronic circuitry of a product is physically realized. The copper traces etched onto the board electrically connected the discrete components (chips, resistors, capacitors, connectors, etc.) that made up the computer's logic, memory, I/O, and power subsystems. When a device contains multiple PCBs, the primary PCB is referred to as the "motherboard".

[Business] A **PO** or **Purchase Order** is the formal, written request that one part of the business (usually the procurement or purchasing department) sends to an external supplier to obtain goods, components, services, or software needed for product development, manufacturing, or office operations.

1983-05-09 Tandon memo concerning 1450 disk drive interface

From: Greg Riker [RIKER, Greg]
To: Scott Scheiman [SCHEIMAN, R. Scott]
Cc: Joe M [MILLER, Joe (aka Joseph B. MILLER III)]
Postmark: May 09,83 – 8:15 AM

Re: Tandon memo concerning 1450 disk drive interface

I have several problems with the Tandon memo² of 5/4 [Wed 4 May]. All of the problems are solvable, according to conversations that I have had with Bill Moshier, the author of the memo. None of them will be solved by the time integration takes place (5/12) [Thu 12 May].

On page 1, the following changes need to be made.

Paragraph 3 - The device numbers shall be: \$31-\$34 in the 'small' (1050 compatible) mode, and \$3A-\$3B in the 'large' mode.

Paragraph 4 - Access shall be allowed to both sides of the disk in single density mode. In double density mode, either 'small' or 'large' mode shall be allowed, as determined by the device ID in the command frame.

On page 2, the following changes need to be made.

Under 'Sectors Per Disk', clarification needs to be added concerning the 'small' mode, i.e. two logical drives of 1040 sectors each.

Under 'Formula', the same clarifications need to be made.

On page 3, device ID's need to be changed as indicated earlier.

² This document was not found (yet?).

1983-05-13 Weekly Status Update, Systems Development Department

From: Joe M [MILLER, Joe (aka Joseph B. MILLER III)]
To: Jim R [ROMANOS, Jim P.]
Cc: Ken [BALTHASER, Ken (Charles)]
Cc: Kamalu [BRUNS, Kamalu]
Cc: Doug [CHOREY, Doug (aka Douglas A. CHOREY)]
Cc: John C [CAVALIER, John C.]
Postmark: May 13,83 – 8:30 PM

Subject: Weekly Status Update, Systems Development Department, 13 May 1983

Organization

Currently, there are 4 open reqs. for systems (two are replacements.)
Interviewed three (██████████) candidates this week.

An advertisement developed for print this weekend was cancelled by corporate.

I've given Glen McCallister ten resumes to bring in for interview, and we discussed the possibility of an open house soon after CES to fill some of the critical reqs.

Ken has agreed to work with personnel in the next few weeks while I ascend into Satori 1400.

I have tentatively identified the Mars lab and the adjacent storeroom for conversion to 1400/1450 lab areas. Also, I would like to defer moving my own office until things quiet down a bit or I see a signed EAR, whichever comes first...

DOS III

Looking good for initial release to Test on 7/5 [Tue 5 July] as scheduled.

Rick Nordin will issue a memo to Test on Monday to announce our intention to address all outstanding PPRs with this release EXCEPT nos. 151 & 262. Both of these require the addition of code to issue a confirmation message if an operation is going to rewrite an existing file. These can be fixed with three man-weeks of effort.

The final ERS will be delivered next Friday.

Speech Handler

The handler code is complete and a first revision is in EPROM but we are unable to test it until HDWR solves the addressing problem we found yesterday.

I expect we will have it running in some fashion on Tuesday. The ERS is being modified to incorporate some new commands and will be delivered on 5/20 [Fri 20 May].

Integral Disk Handler

Tandon did not arrive today, as planned, to begin integration testing of the 8050 controller and Greg's firmware.

We do not have a date, as yet, when this will happen. Again, the handler is complete and ready for first-pass testing, per our understanding of the rather sketchy hardware specs.

John has completed a first draft of the ERS and will be incorporating a number of comments from Greg and Scott for final ERS delivery on 5/20 [Fri 20 May].

Modem Handler

I'll be circulating a copy of the ERS on Tuesday for comments.

The handler code is 75% complete and should be ready for rudimentary testing when the prototype is delivered sometime next week (it was due today; the slippage should not affect the schedule.)

I was under the impression, until yesterday, that the 8K 'Demo' application for the onboard modem was to be packed-out with the CPU. This is NOT the case. It is now slated as a separate product to be sold at cost (with appropriate dealer margins, of course.)

Virtual ROM

The film for first-article PCB is ready to send out for cartridge boards. We need to generate a PO for about \$500 to turn this on outside.

1600/SweetPea

As far as I'm concerned, these projects have now become software opportunities for Larry Plummer. We will, of course, respond to reasonable consultation requests.

Sierra

As you may recall, you and I attended a meeting with Dale to indicate our willingness to support this project with HCD software staff starting with a few in July/August.

ATARI 2000

Approximately 6 people responded to Ken's memo requesting ideas for Atari's next major CPU offering.

These were given to Don Lang (CPU manager for the 2000) with the understanding that after the CES/1400 crunch more communication could occur.

CPCI AMAC

Rick Nordin and I reviewed the current source and agree that they are within contract.

They will be up on Tuesday 5/17 [Tue 17 May] to demo the package and would like someone to spend some time feeding it test decks while they're here. Perhaps someone from Applications would be appropriate.

1983-05-18 1450 Integral Disk Schedule

From: Joe Miller [MILLER, Joe (aka Joseph B. MILLER III)]

To: Larry Plummer [PLUMMER, Larry]

Cc: Jim Romanos [ROMANOS, Jim P.]

Cc: Jeff Hiembuck [HIEMBUCK, Jeff]

Cc: Scott Scheiman [SCHEIMAN, R. Scott]

Postmark: 18 May 1983

Subject: 1450 Integral Disk Schedule

Please reference Scott Scheiman's memo³ to you on May 4.

As you know, we have not received a working prototype of the 1450XLD. We have been in daily contact with Bill Moshier at Tandon to help identify the problems he has been seeing. In fact, Taian Su and Greg Riker are flying down tomorrow to provide direct assistance.

The prototype we received on Monday for modem firmware testing, also a 1450 PCB, precludes us from properly addressing the handler ROM. We are working closely with Rashid Khan to resolve these issues.

The firmware for [both] the speech and modem handlers are on schedule. However, we are now in a day-for-day slip on the firmware for the disk handler. As of this writing, we have not established a date to begin integration of Tandon's controller code with our disk handler.

Aggravating the problem for ourselves and Tandon is the fact that an accurate hardware specification for the 1450 is yet to be prepared.

I'm confident we can still meet our schedules if these matters are resolved within the next few days (and I believe they will be.)

³ This document was not found (yet?).

1983-05-20 Weekly Status Update, Systems Development Department

From: Doug [CHOREY, Doug (aka Douglas A. CHOREY)]

To: Brad [FULLER, Brad]

Postmark: May 23,83 – 3:09 PM

Subject: Weekly Status Update, Systems Development Department, 20 May 1983

[The original email was probably written by Joe MILLER on Fri 20 May, sent to Doug CHOREY who then forwarded it the next Monday]

Organization

We interviewed [REDACTED] today. He was generally well received. I plan to hold off with an offer until at least Thursday, when we will have interviewed 4 others for positions in Systems.

An advertisement for the opened reqs. will run in this Sunday's papers.

DOS III

Looking good for initial release to 7/5 [Tue 5 July] as scheduled.

Rick Nordin will issue a memo to Test on Monday to announce our intention to address all outstanding PPRs with this release EXCEPT nos. 151 & 262. Both of these require the addition of code to issue a confirmation message if an operation is going to rewrite an existing file. These can be fixed with three man-weeks of effort.

The ERS was delivered to Jeff Belding today, as scheduled.

Speech Handler

The handler code is complete and undergoing A-test on the 1400 prototype board. The ERS was completed today, as scheduled.

Integral Disk Handler

This one continues to be a major cause for concern.

Greg Riker and Taian Su travelled to Tandon yesterday [Thu 19 May] to assist with a first-attempt at integration. The Tandon controller code (8050-based) is not yet in a form to begin this procedure.

Also, some issues regarding the 1450 power-up sequence (possibly damaging diskette data) have been raised, and will be addressed at a meeting of all concerned parties on Monday.

I sent a memo describing some of our 1450 concerns to Larry Plummer on 5/18 [Wed 18 May].

The ERS for this handler was "completed" today, as scheduled. It will need to be changed to reflect our final solution to the power-up problem, early next week.

Modem Handler

The ERS was completed today, as scheduled.

A draft copy was given to Markene Kruse-Smith, tech-writer for the speech and modem user-documentation, to read over the weekend. She is aware that the final, approved ERS may contain changes.

I may have to resort to drastic measures next week to find blocks of uninterrupted time for coding of this handler and the 8K application cartridge.

Virtual ROM

The film for first-article PCB is ready to send out for cartridge boards.

We still need to generate a PO for about \$500 to turn this on outside.

1600/SweetPea

No activity charged to these accounts this week.

Sierra

No activity.

ATARI 2000

No activity.

CPCI AMAC

I tested a copy of the Linker on a 1200, it didn't work. They were using an unsupported keyboard handler entry point. They are now aware of the problem and will correct it.

1983-05-20 [estimated date] 1450

From: Greg Riker [RIKER, Greg]

To: Jim Romanos [ROMANOS, Jim P.]

Subject: 1450

[Since the trip to Tandon took place on Thu 19 May,
Since the team was apparently back on Fri 20 May,
Since Joe Miller's meeting about the possible boot up menu is scheduled on Mon 23
May,

I estimate that this message was probably written & sent on Fri 20 May]

Since my last report to you concerning the 1450, there have been several changes in the status of the project that dramatically affect our delivery schedules.

1. Before my trip to Tandon, I was led to believe that they were ready for the integration of the disk and the Operating System. Upon arrival at Tandon, I found that this was not the case. We have made emergency arrangements to attempt to salvage the schedule. We will be receiving a 1450 'emulator' piggyback board from Tandon that will act somewhat like a real 1450. We will be receiving object code for the drive via a modem link with Tandon. This will allow me to install new revisions of the controller firmware in our prototype on a timely basis, without having to use an expediting service.
2. There is a very real danger of the user accidentally writing to the disk at power-up time. This was not anticipated in the original design, and as such is not covered by any existing ERS's. Joe Miller has scheduled an emergency meeting with all of the involved parties to resolve the issue. The decision may impact my coding schedule. If it is decided to have some sort of a boot-up menu, it will need to be spec'd, and it will probably fall into the Disk Initialization Routine area, and therefore be added to the code that I am to generate.

Until these issues are resolved, I am at a virtual standstill with my efforts on the 1450. As soon as I have a working 1450 prototype, and a revised spec reflecting the power-up problem, I can continue working on the project.

1983-05-23 Changes Mandated by Meeting

[No author, "To", "From", could be located. Only the date thanks to the "Subject" field]

Subject: ERS Changes Mandated by Meeting of 5/23/83 [Mon 23 May]

1. There will be a message at Disk Driver Init time to prompt the user to either insert disk and close the door, or press RETURN if disk boot is NOT desired. This will only occur at Cold Start.
2. A mechanism will be introduced that will allow the 1450 to emulate SIO operation, i.e., it will slow down the drive access to the speed of SIO. The mechanism for engaging this is TBD.
3. Power shall be applied to the drive in all cases; however, a disk boot shall not be attempted nor shall a prompt appear if the door is closed at INIT time. If, at COLD start, the door is closed, the drive(s) shall be considered non-existent for the duration of the session.
4. If the parallel drive is not booted, an attempt will be made to boot SIO drive #1.
5. It should be noted that a Power-up sequence and a user-initiated COLDStart (setting COLDST = 1) are treated the same way - the software cannot tell the difference.

1983-05-27 Monthly Report for May, 27 May 1983

From: Joe M [MILLER, Joe (aka Joseph B. MILLER III)]
To: Jim Romanos [ROMANOS, Jim P.]
Cc: Balthaser [BALTHASER, Ken (Charles)]
Cc: Bruns [BRUNS, Kamalu]
Cc: Chorey [CHOREY, Doug (aka Douglas A. CHOREY)]
Cc: Curran [CURRAN, John R.]
Cc: Scheiman [SCHEIMAN, R. Scott]

Subject: Monthly Report for May, 27 May 1983

Products

Systems products

Surely OS

Revision 2 of the SURELY Operating System was released by Software on 5/11 [Wed 11 May].

All current PPRs have been addressed with this release.

We are in the process of moving all of the SURELY OS source code from the Tandem to the MV-8000. However, the remaining disk drive on the Tandem suffered another head-crash this week, slowing this activity and postponing delivery of a SURELY OS listing requested by International. The Tandem should be back up by 6/3 [Fri 3 Jun].

DOS III

An ERS for DOS III was submitted for external review on 5/20 [Fri 20 May], as scheduled.

The coding for this project is on schedule and will be delivered to Test on 7/5 [Tue 5 July].

It is our intention to address all outstanding PPRs with this release, except nos. 151 and 262. These will require an additional effort of three man-weeks.

14xx Integral Speech Handler

An ERS for this handler was submitted for external review on 5/20 [Fri 20 May].

The coding is 95% complete and has undergone exhaustive a-testing on a 1400 prototype.

However, we have not yet received a working speech circuit on a 1450 prototype. This handler will be released to Test as scheduled, on or before 6/10 [Fri 10 Jun].

14xx Integral Modem Handler

An ERS for the modem handler was submitted for external review on 5/20 [Fri 20 May].

Code development is progressing on schedule and will be ready for release to Test on 6/10 [Fri 10 Jun].

We have received a working modem circuit for development on a 1450 prototype, but we are currently unable to test the code on our 1400 prototypes.

There is still some uncertainty over which modem chip we will be using for these products. It now appears that both the Texas Instruments and the National chip will be used for some period of time. The handler software is being designed to support either chip.

Ken Stein, of HCD Test Engineering, has requested some additional features for the modem self-test. These will be incorporated if space and time permit.

1450 Integral Disk Handler

An ERS for this handler was circulated for external review on 5/26 [Thu 26 May].

We have not yet received a working 1450 prototype with disks.

Today we received a 'butchered' 1050 drive from Tandon attached to an Atari 1450 mock-up which failed to operate with our handler.

Until we can begin the process of software integration with operative Tandon controller code, we are in a day-for-day schedule slip for the handler.

We will release the handler to Test three calendar weeks from the start of integration.

In the meantime, we have discovered that the 1450 can potentially damage diskette data during power-up, and have designed software procedures to minimize this danger.

Also, we have added to the handler the capability to emulate the slower SIO-based disk protocol in order to support a disk protection scheme currently popular with outside developers.

14xx 8K Modem 'Demo' Cartridge

This product, today, was officially christened "COMMUNICATOR 14" for marketing purposes.

Functionally, the program is a revision of the Atari Executive (ATEX).

An ERS is being developed and will be available for internal review on 6/3 [Fri 3 Jun]. The software is still scheduled for release to Test on 6/13 [Mon 23 Jun].

Organizational items

Staffing

Ten candidates were interviewed for positions in Systems.

We are in the process of extending offers to three of them: Daniel Horn, Rich Richardson, and James Warhol.

Harry Stewart left Atari today, on indefinite hiatus.

Reqs. Outstanding

Department	Number
40529	44581
40529	44582
40529	63578
40529	63579

1983-05-27 Monthly Report, May 1983

From: John Curran [CURRAN, John R.]
To: Jim Romanos [ROMANOS, Jim P.]
Cc: Balthaser [BALTHASER, Ken (Charles)]
Cc: Bruns [BRUNS, Kamalu]
Cc: Miller [MILLER, Joe (aka Joseph B. MILLER III)]
Cc: Chorey [CHOREY, Doug (aka Douglas A. CHOREY)]
Cc: Gooch [GOOCH, Sherwin]

Subject: Monthly Report, May 1983

Products

Systems products

Surely OS

Developed a final draft of the 1450 Integral Disk Driver ERS by 5/20 [Fri 20 May].

Continued discussions have been on-going with Marketing, Hardware and Tandon to resolve the issues of power-on user interface.

Revisions to the ERS have continued almost semi-daily to keep it up to date with the current design. At this point, we have the best compromise user interface possible given the constraints we are working under.

At best, it appears to be a 'kludge' that will baffle all but the most sophisticated users.

Relocatable assembler

Met with half of CPCI and received a preliminary copy of the LINKER utility.

CPCI demonstrated the LINKER to some of Ken's and Joe's people. The overall response was fairly good. The major points of concern were the fact that it won't run on the 1200 and that the function key meanings are different from the SWEAT tools.

I have forwarded a letter to CPCI, asking them to correct these problems. Meanwhile, I have been working on updating the ERSs to reflect the current design. The completed product should be delivered sometime in early June.

Telecommunications

1030 Modem/ModemLink

All of the code has been written and is being debugged.

Integration of the code and EPROM burning is underway.

While the project is still running tight, completion by 5/31 [Tue 31 May], or sooner, appears likely

[Jim → Get latest status from Sherwin or myself prior to submitting your monthly].

1080 Classnet

An ERS for the 1080 [Classnet] has been drafted and being reviewed internally.

Internal review should be completed in early June, after which, the final draft will be circulated for approval.

Negotiations with MECC have not been completed. Jamie is negotiating with MECC, still, supposedly?

Organizational items

Staffing

Pat Bergeron has accepted a transfer from Test Engineering to Software Development. Pat is filling the requisition for a Senior Engineer to work on the 1080 [Classnet]. Pat will be starting work on 5/27 [Fri 27 May].

New hires

Pat Bergeron, Senior Engineer, Telecommunications, reporting 5/27 [Fri 27 May].

Reqs. outstanding

None

1983-05-28 1450 Status

From: Joe M [MILLER, Joe (aka Joseph B. MILLER III)]

To: Mr.Scott [SCHEIMAN, R. Scott]

Postmark: May 28,83, 10:46 PM

Subject: Forwarded: 1450 Status as of 5/28 [Sat 28 May]

[Original email from Greg RIKER to Joe MILLER, who then forwarded it to Scott SCHEIMAN]

I have finished testing the first prototype 1450 delivered from Tandon. There are several problems with it, which are outlined in this memo.

1. READING a single density diskette, the highest number that the 1450 will accept in a Command Frame is 684 (\$2AC). The sectors from 685-720 are inaccessible.
2. When READING a sector of known content, the buffer returned is transposed. The bytes that should be at \$00-\$3F show up at \$40-\$7F. The bytes that should be at \$48-\$7F show up at \$00-\$37. Bytes \$40-\$47 don't show up at all. I have verified that this problem is at the 8050 level by monitoring the data transmission with the logic analyzer.
3. The drive does not respond properly to a STATUS command (\$53). The response to the Command Frame is \$4E (NAK). No further data is passed.
4. Neither FORMAT command works. The Command Frame is ACKnowledged (\$41), but the next byte received is an \$FF (it should be either a \$43 or \$4E). This indicates that the drive received the command, but could not execute it. I tried FORMAT commands with and without a write-protect tab, and it made no difference. I also attempted double-density FORMAT commands, and got identical results.
5. Neither WRITE (\$57) nor PUT (\$50) work. Both commands are ACKnowledged, but after the 128-byte data transfer, and the checksum transfer, a NAK (\$4E) is received. This implies a checksum error in the data transmission. If only I could do a STATUS call to check that theory...
6. We still don't have any documentation from Hardware concerning the DIAGNOSTIC commands (\$23/\$24). Until we know what these commands do and how they work, I can't test them.
7. I'm concerned about not being able to test the double-sided features of the drive, since it is just a 1050 in 1450 clothing.

[Bonus] 1983-07-22 Status

[Bonus: this last email mentioning Tandon is related to the 1050, not to the 1450XLD]

From: Joe Miller [MILLER, Joe (aka Joseph B. MILLER III)]

To: George [SIMCOCK, George]

Postmark: 7/22/83, 2:10 am

I located the problem in the SIO software UART 'receive' routine. The change from REV F to REV G (and REV H) introduced 1 additional machine cycle in some very time critical code.

I patched the code, burned a new EPROM, and it seems to work fine. I've left the new ROM in the open 1050. By the way, I also tried this corrected version with DOS III at double density without problems.

I called Bill Moshier at 1:30 this morning to let him know what we had found. He wasn't sure whether he was going to feel well enough to go into work today, so you may want to call Tandon directly.

I am concerned, however, that Tandon is ramping up in Singapore before we've had a chance to fully test the firmware. This recent problem is an example of what can happen when a change is made in an apparently unrelated portion of the code.

If you have any questions, I'll be in later this morning. Or, if it's urgent, feel free to call me at home, 353-██████. I have the source listings in my office.