Inter Office Memo

17 JAN 1983
FIELD SERVICE

ATARI®
Coin Operated Games Division

To: Distribution

From: Darl Davidson

Subject: Pole Position Problems Date: 12/21/82

I have received input on problems from Engineering, the field, Field Service; offices in Sunnyvale, New Jersey and Ireland. On the ten problems we have currently been notified about, we have sent a memo out to the field, to the Principals and Service Managers, notifying them of five of the problems. (See the attached memo - New Games Technical Update Pole Position).

This week we will be sending another memo out to the field explaining three other problems to them. The problems are as follows:

- Possibility of a 20 Amp fuse being in the 5v line, should be a 25 Amp fuse.
- Problem with not qualifying when you get 73 seconds, like explained on the attraction glass of the game. This depends on what difficulty setting the game is in and this is not specified on the game, or in the manual.
- Last is the steering PCB, Pole Position will only use a -02 steering board. This is the same problem Centipede had; in Centipede the board was redesigned so it could use the original -01 steering board. After speaking with Sam Deus, I have found Pole Position can not be redesigned.

This morning I have received a phone call from Atari Ireland and they are having a new problem there. The encoding wheel is falling off the steering assembly. Eamonn McGrath and I talked to Otto De Runtz, we explained the problem and Otto explained that Ireland was

not using the right grease in the assembly. Nyogel 779 is called for and they were using a light spray in place of that material. The last time Nyogel was used, the line broke out with some kind of eye infection. The people on the line were against using Nyogel. Otto recommended a different lubricant which they might be able to acquire in Ireland.

Also, Eamonn felt that the bracket was binding and they were actually defective, but they did not catch the first ones that were built. Eamonn saw these problems at the Paris show where the steering assembly fell apart, twice.

The last input I have, is the build up of heat inside the cabinet. I have received many phone calls from the field inquiring why there was not a fan in the cabinet. Each person brings up the point that they spend over $4,000 for a piece of equipment and it does not have a $10 fan in it. Upon investigation I found that the game had been scheduled a fan but at the last minute it was pulled out because of the temperatures in the cabinet were not sufficiently high to justify one.

Some of the problems which we have found in this game would have been hidden by a fan. I must suggest that in future games and in the next run of Pole Position we try to include a fan, the customers will feel more confortable with the game.

Thank you.

Darl

DD/ca

cc: Don Osborne
Dick Maslana
Bob Harvey
Allen Van Campen
John Hill
Sue Elliott
Dan Van Eldern
San Deus
Otto De Runtz
John Farrand
Pete Takaichi
Ben Fleishman
Hugh Langins
Russ Mac Donald
Bob Salmons
Bernie Barranger
Atari Ireland
Field Service, NJ
Field Service, Sunnyvale

Inter Office Memo

Eleanor, for your info! Cy.

FIELD SERVICE

07 FEB 1983

ATARI®

Coin Operated Games Division

To: Darl Davidson

From: Bernie Barranger

Subject: Pole Position

Date: Jan. 19, 1983

The following mechanical problems have been reported. Field solutions are listed.

- Foot Pedal

Problem: The gas pedal does not return to the full up position.

Solution: Apply light oil like WD40 to the potentiometer shaft. If defective base plate, exchange for new base plate.

Problem: Cables coming out of eyelet crimp. One operator had 8 of 10 games where cable broke. (S.N.s: 243, 681, 685, 686, 687, 688, 689, & 690) -

- Steering Assembly

Problem: Four different cases where steering wheel locked up.

Solution: Replace the two nylon washers on both ends of the bearing. Make certain the bearing is lubricated.

- Gear Shift

Problem: Intermittent gear shift.

Solution: Use a longer actuator pin. Temporarily a Battle Zone pin filed 1/16 inch will suffice.

Following are electrical problems encountered on Pole Position PCB's.

Seven reported defective Z8002. All manufactured by AMD with no consistent date codes.

Boards Repaired

CPU 001015	(2) 137199-001 (RAMS)
CPU 002374	137199-001 (RAM)
CPU 002333	137275-001 (Z8002)
VID 002035	74LS174
VID 004012	136014-120 (ROM)
VID 003596	74LS367
VID 004188	74LS158
VID 003392	74LS73
VID 001358	131000-002 (3.9v ZEVER)

BB/ca

cc: Jeff Ketelson
Ben Fleishman
Tom Burke
Woody Woodworth
Michael Hinkin
Sam Deus
Otto DeRuntz
Dick Redkart
Jim Vaughn
Don Osborne
Dan Van Elderen

Inter Office Memo

FIELD SERVICE
07 FEB 1983

ATARI®
Coin Operated Games Division

To: Darl Davidson

From: Bernie Barranger BJB

Subject: Pole Position Field Report

Date: Feb. 1, 1983

cc. N. Jogd
T. Gunn

Last weeks mechanical problems update:

- o Foot pedal binding - Under control.
- o Steering wheel locks up - Under control - Engineering determined that the cause to be lack of lubrication on the decoder shaft.
- o Intermittent gear shift - Under control.

Mechanical problems reported this week:

Problem: PCB cracked around flyback tranformer.
Action: Repaired by distributor.

Problem: No cleats on monitor shelf. Monitor slid back destroying CRT, PCB and picture tube (SD 104).
Action: Customer service replacement.

Problem: Monitor shelf cracked at edges connected to side panels. The CRT, PCB and picture tube were destroyed. (VR 1831 and 1017).
Action: Distributor filed for freight damage.

CABINET

Problem: The upper ventalation grill was missing and the dashboard decal was placed upside down on the dashboard housing. (UR 1708).

Cabinet Continued.

Action: Distributor filed for freight damage.

Last weeks electrical problem update:

Defective Z8002: Problem has not resurfaced this week. Three of the four supplied to Engineering were hard failures.

BOARDS REPAIRED

VID001040.....90-7036 (RAM)
VID005121.....137283-001 (CUST. 3)
VID003403.....144004-003 (CRYSTAL)
VID005248.....137282-001 (CUST. 9)
VID002459.....37-74LS161
CPU001169.....37-4584B
CPU005387.....37-74LS373

BB/ca

cc: Tom Burke
Woody Woodworth
Michael Hinkin
Sam Deus
Otto DeRuntz
Dick Rekart
Jim Vaughn
Don Osborne
Dan Van Elderen
Bob Salmons
Frank Becker
Sunnyvale Techs
New Jersey Techs
Eamonn McGrath

Inter Office Memo

FIELD SERVICE
14 FEB 1983

ATARI®
Coin Operated Games Division

To: Darl Davidson

From: Bernie Barranger BB

Subject: Field Trip - Oakland

Date: Feb. 4, 1983

Bill Bolton of Advance and I visited three operators who had gas pedal problems and/or game reset after player enters his initials.

Electronic Amusement

Gas Pedal: The two games in the shop which were returned from locations needed lubrication. Mechanics in the shop were not aware that lubrication was required.

Reset: The problem is related to the custom-10 chips in the B processor circuit.

ACA

Gas Pedal: One assembly had the old base plate. The service manager wants to use switches.

Reset: Fans were installed in the games that exhibited resetting. This fix, perhaps temporary, cured the problem.

Automatic Merchandising

Gas Pedal: Does not want the hassle of lubrication or making sure the pedal is up on power up. He will convert the gas pedal to a switch activated accelerator.

The great majority of the games with pedal problems are located in unattended locations where proper pedal adjustment prior to power

up is non-existent. It appears the use of a switch is inevitable. Either by word of mouth or a "modification kit", switches will be used by operators.

BB/ca

cc: Jerry Marcus
Field Service Personnel

Copy - Martin
Eamon
Sam Dews.
Otto DeRuntz
Hugh Langan

EAMON

Inter Office Memo

ATARI®

Coin Operated Games Division

To: Field Service

From: Bernie Barranger BJB

Subject: RAM Self Test POLE POSITION Date: March 7, 1983

23 MAR 1983

The table below lists all possible RAM failure codes for self test. Our self test program codes are underlined. However, a ROM 0 may either be 8F on the video PCB or bad data from the Z8002 on the CPU.

VIDEO PCB

RAM CODE	RAM LOCATION	RAM CODE	RAM LOCATION
0	8F	29	4F
1	7F	30	3E
2	8H	31	4E
3	7H	40	8F
4	3F	41	7F
5	3E	42	8J
8	8K	43	7J
20	8F	44	8H
21	7F	45	7H
22	8J	46	8K
23	7J	47	7K
24	8H	48	3F
25	7H	49	4F
26	8K	50	3E
27	7K	51	4E
28	3F		

CPU PCB

RAM CODE	RAM LOCATION
0	7J*
6	7J*
7	7K
8	7E
20	7J*
26	7E
40	7J*
46	7E

* OR Z8002

Carmen McCutch

Inter-Office Memo

ATARI
Coin-Operated Games Division

14 MAR 1983

To: Dick Maslana

From: Sam Deus

Subject: Pole Position Reset Problem Date: February 28, 1983

During the past four days, we have been investigating the reset problem on the three boards we have received from field service. So far we have not been able to relate the problem to one specific area or part. As we suspected, the problem still seems to be in the general timing. The random contribution of delays of all the parts causing the intermittent reset problem.

We are able to correct the reset symptom by two methods and we are planning to implement this to field failures. Unfortunately, we are not sure how we are fixing the problem - only making a calculated guess. Out of three failing boards which showed exactly the same kind of failure symptom, one had cold solder joint in one pins with one of the custom 10 chips. The other two boards had custom PAL propogation delay problems. Both of the PALS were within the electrical specification and on the slow side of the parameters.

As you know, alot of calls came in from the field reporting that units failed because of high temperature and cooling the units alleviated the symptom. What we have observed from the two boards is that propagation delay of the PALS increase about 5 to 10 nano-seconds with the temperature rise. Of course the failure mode is not exactly a temperature problem but how close the initial propogation delay of the PALS to critical point. One to two degree of temperature rise could make the part go over the critical delay. Again we cannot say that PALS are making the boards fail because the failing PALS substituted to initially a good working board does not make that board fail. This is because the total propogation delays of the IC's used in the system are not close to the critical point and PAL alone cannot make it fail. Since these PALS are controlling the critical control signals of the custom 10 chips, we have decided to fix the propogation delay by:

Gating the PAL control signals to the custom 10 chips with addition of external logic.

or

Replacing the PALS with faster PALS. This solution currently is a temporary one, but could be final. The following are the suggestions and conclusions we have come up with:

1. More than one type of failure on the board could cause the

same reset symptom. However, we believe that the majority of the problems are from the timing propogation delays.

2. Customer Service should be aware of the above possibilities when implementing the corrections.

3. Bulletins should go out to our customers describing this problem and the corrections.

4. We should, and will, be looking to get faster PALS (not guaranteed, but they help) for the next production run.

5. Since there is no good place screening for heat excellerated failures, it may be possible to overheat the boards on the production floor of the final assembly. This could be done by covering the ventilation holes of the RF cages with the packaging.

6. Since we have a little better idea now about the problem than a few days ago, we will contact Namco engineers and pose the problem to them to check the validity of our corrections. We do not want to go through another correction procedure. (Namco is and has been notorious with designs that have timing problems). This is the fourth major timing problem that we have had to fix in Pole Position.

7. Unfortunately we anticipate that the reset related problem could increase on the units currently operating on the field as summer approaches. Customer Service should be prepared should this be the case and we will support them.

8. We will implement the corrections to other failed boards that will be coming to us from the field to insure that solution is effective to all failed boards.

Please contact me if you have any questions.

SD:jdh

cc: Tom Burke
Steve Calfee
Darl Davidson
Chris Downend
John Farrand
Riv Hight
Singh Mangat
Eamon McGrath
Pat McSweeney
Rich Moore
Dan Van Elderen

Eamonn

Inter-Office Memo

ATARI
Coin-Operated Games Division

23 MAR 1983

To: Dan Van Elderen

From: Sam Deus Sam

Subject: Namco Meeting on Pole Position Problems

Date: 3/11/83

While I was in Japan I met with Namco Engineer, Mr. Tashiro, three times at the Namco facilities. I explained to them our problems and demonstrated the problem with the Atari boards that I had with me. In the following days they studied the problem and were able to recreate it on their boards. The problem has turned out to be exactly what I suspected originally which I explained in my letter to Namco.

They were able to elaborate on the problem as to how it happened but did not arrive at any better solutions than what we are already in the process of implementing. However, they did confirm that the two alternative solutions that we have will work. I have received a written explanation from them in Japanese which Riv Hight will translate.

The first solution is to make changes on the CPU board. That will add an IC chip to get the critical signals to custom 10 chips.

The second solution is to use Monolithic Memory PALs which are typically 15 to 20 seconds faster than Signetics and do not drift with temperature which also affects the operatiion of custom 10 IC's. This solution is not one hundred percent guaranteed because of the PAL specs. It is not a good engineering practice to work with typical values, however, for all practical purposes MMI parts are much faster than their typical values. It is a small calculated risk that these MMI parts would be any slower than what they are now in the life time of the Pole Position boards.

Our plan of action is:

1. To buy MMI PALs immediately (in the process) in place of all of the Signetics parts on all the boards that are currently in Atari possession. We have assigned a new part number for MMI PALs. Signetic PALs are sleeping time bombs that could be more Field Service nightmares.

2. To advise all the customers that are having reset problems to change to this new part.

3. To make further modifications to the boards for the next release. I am confident that these actions will solve the reset problem once and for all. It is necessary to keep in mind that presently we have shipped a lot of boards and as

Mike 3/16/83
~~Rick~~ Please Get MMI Parts for us ASAP. We will need to retro the field Find out how many we used in game (Signetics). Let me now today the delivery schedule I need a couple hundred NOW. THIS WEEK, Today, yesterday last month. You get the IDEA!

CC Jo-Ann, ~~Rick~~ Mike ALL FSM
Elaine, Jeanette, Martin

Inter Office Memo

23 MAR 1983

Eamon

ATARI®

Coin Operated Games Division

To: J. Ketelson

From: K. Renda KW Renda

Subject: POLE POSITION RESET PROBLEM Date: 3/11/83

Problem: High score table resetting.

Cause: Marginal timing in the reset circuit caused by slow PAL in location 2N of CPU board.

Solution: (Long and short term) Use faster PAL (being supplied by MMI) in location 2N of CPU board. (137316-001)

Problem: Distorted audio.

Cause: Timing or noise related.

Solution: Short Term - add a 200 pf cap between pin 13 of IC location 2N and GND, as required to correct problem. Deviation #10587.

Long Term - Engineering evaluation problem to determine permanent solution.

KR:js

Copy Bernie & FSP

Inter Office Memo

23 MAR 1983

ATARI®

Coin Operated Games Division

To: Darl Davidson

From: Bernie Barranger

Subject: Pole Position Field Report Date: March 11, 1983

Mechanical Problems:

Complaint: Monitor CRT PCB cracked in half. (UR1291)
Action: Customer Service replacement and returned cracked PCB for evaluation.

Complaint: Gas pedal cable crimps not holding. (UR1174 and UR4117)
Action: Customer Service replacement.

Complaint: Broken picture tube and neck PCB. Monitor shelf was held in place by six finishing nails. Nails came loose in transit.
Action: Customer Service replacement.

Electrical Problems:

Complaint: Game resets when high score table is displayed. (15 Games)
Action: Engineering evaluated failing CPU boards and developed a modification. Field tests indicating mod is effective.

Complaint: The thermal switch of the power transformer is opening.
Action: Customer Service replacement. Two Ravenwood transformers exhibiting the symptom sent to Engineering, 3/8/83.

R & R Repairs

CPU

Serial	Repair
007133	137280-01 (PAL-1)
003639	Reset Mod.
008123	Trace Short
010306	137275-001 and Z8002
015571	Reset Mod.
015439	Reset Mod.
008235	Reset Mod.

Distribution:
T. Burke
W. Woodworth
M. Hinken
S. Deus
O. DeRuntz
D. Rekart
J. Vaughn
D. Osborne
D. Van Eldern
New Jersey Field Service
Sunnyvale Field Service
Eamonn McGrath
Martin Boucher