December 2008

Slot Tech Magazine

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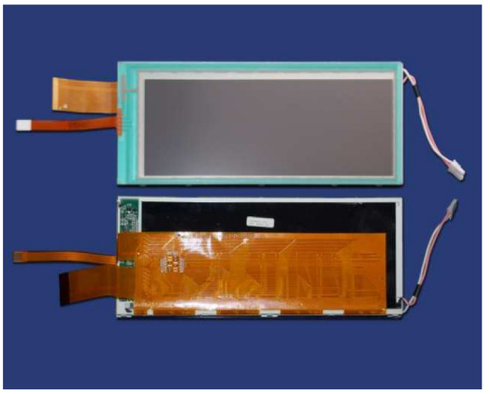

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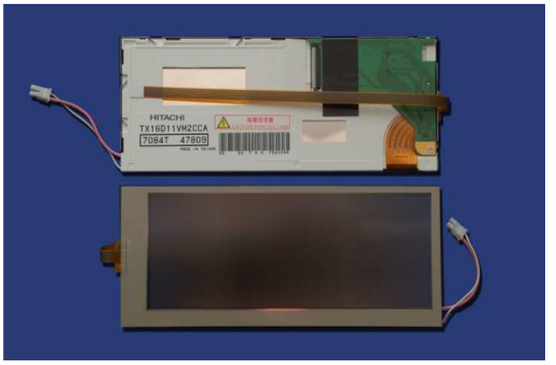

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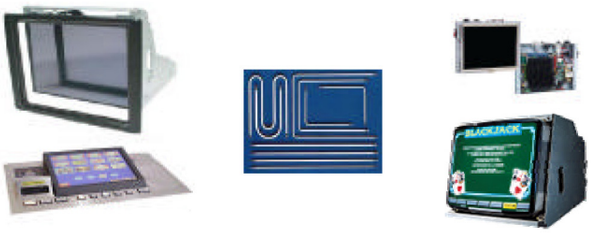

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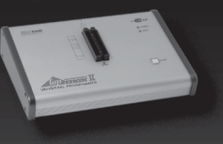

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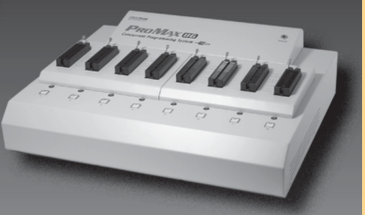

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December 2008

Randy Fromm

Dear Friends,

What had started out as a simple research project has revealed something interesting. I asked James Otto, Bench Tech for the Beau Rivage Casino, if he could help me with some research. I wanted to find out exactly how much power was consumed by the various makes and models of slot machines on today's gaming floor. I thought it would be informative in order to balance out the loads when installing banks of machines. Just how many can you put on one power strip or one circuit-breaker? The results are published below.

As a surprise bonus (and a tip o' the hat to Mr. Otto's attention to detail in his report) there is something that just jumps off the page at you. If you are looking for an immediate and substantial cost savings for your casino, you can begin right now by looking into using LEDs for general illumination in your slot machines. Look at the yellow highlighted area below. Close to 50 watts (49.2) was saved in one S2000 alone by using LED lighting. When you do the math, that's 438 kilowatts per year for 24/7 operation. I don't know what you pay for power but DOE reports a US average of around a dime per kWh. This figure is somewhat skewed by Hawaii at .32/kWh. Regardless, you can save $40-50 per year per machine. This does not even include the almost total elimination of replacement costs for tubes and ballasts as LEDs can go 50,000 hours MTBF and, unlike CCFLs, there are no ballasts to worry about.

Randy Fromm

Randy Fromm - Publisher

MFG	MODEL	POWER @ idle	NOTES
IGT	Jepordy	159.6	top box
	S2000	135.6	
	S2000 LED	86.4	LED lamps installed
	WOF	207.6	top wheel
	Trimline	244.8	2 monitors
	AVP Server Based	252	2 monitors and topper
	Game King	132	
	S2000 Top Dollar	162	
	AVP Slant	240	
	S2000	144	progressive stand alone
Aristocrat	Mark5		short top
	Mark5		high top w/CRT
	Mark5	112.8	high top w/LCD
	Mark5	154.8	Millioniser
Bally	Alpha	205.2	reel/monitor
	Alpha	150	1 monitor
	S6000	172.8	
	S6000	186	2 progressive meters
	S6000	266.4	Quarter Millions
	S6000	242.4	Monti Carlo
	Bally Slant	196.8	
WMS	Blue Bird	148.8	Progressive Wiz of Oz
	Blue Bird	213.6	2 monitors
	Blue Bird	211.2	reel game with topper
	Blue Bird	122.4	1 monitor
Konami	Reel	106.9	
	Reel	103.2	CCFL replaced by LED conversion

Randy Fromm's
Slot Tech Magazine

Editor
Randy Fromm
Technical Writers
Ted Befus, Kevin Noble, Herschel W. Peeler, Pat Porath, Vic Fortenbach, James Borg

International Contributor
Martin Dempsey

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1944 Falmouth Dr.
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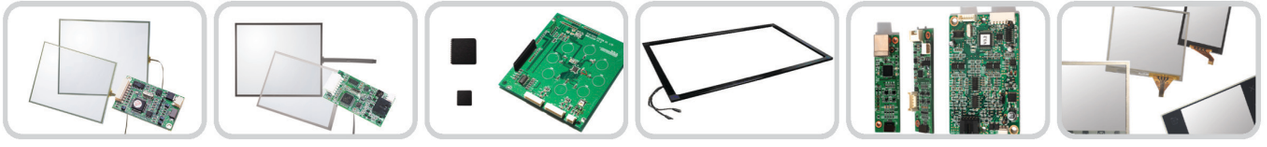


Out With the Old - Continued

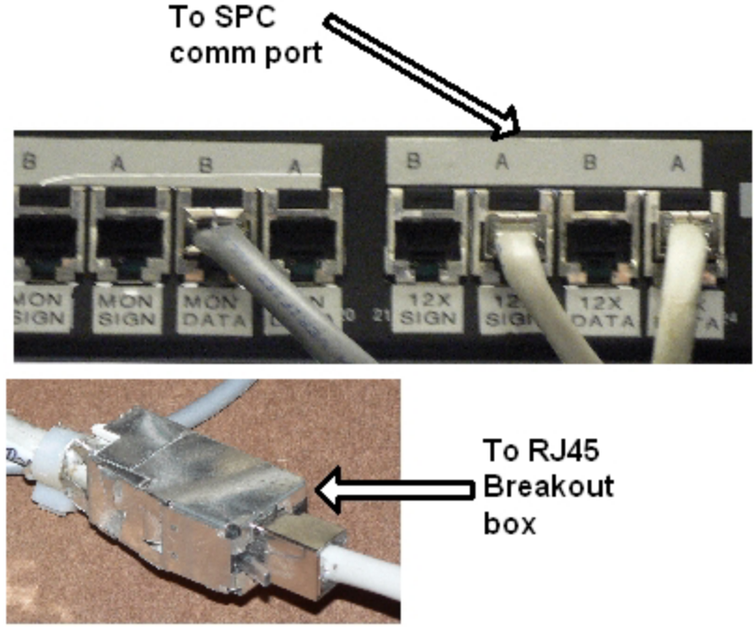
By Ted Befus

Since my last article talked about replacing your older PGI equipment with the new SPC I guess its only fitting to put out an article to show you how to you actually do this.

I guess the first place to start is to determine exactly what we need for parts. Even the slowest witted of individuals (which includes me) should know that we need an SPC. I don't have a part number for it so unfortunately you'll just have to speak to your PGI rep about getting one. With this we will need a SIB (smart interface board) PGI part number 391-024-11RH. One thing worthy of mentioning is that the EPROM will be specific to the manufacturer of the game so be sure to check with your PGI rep for what you need. To connect the SIBs we will need a daisy chain harness (PGI part number 311-504-56RH) and a harness to connect the daisy chain to the SIB, PGI part number 311-504-26RH. Lastly, we will need the harness to connect the game to the SIB (sorry no part number here as this will vary with the manufacturer of the game; the other harnesses are generic and can be used across all manufacturers).

If you're running an overhead sign, you will also need a SIB to connect to the overhead display. In this article, we will be connecting to an older style CHAMII+. The SPC can connect to the PGI Cool Signs as well. You can order a harness to connect the SIB to the CHAMII+ but I will give you the layout here as it's pretty simple to make.

After you have everything laid out as to what you need, you have to address a few other concerns. Can the SPC be left in the slot bank? Does it have to be locked away from prying hands? Our controllers are all locked away in the same room as our SDS fuserack so leaving it with the games is not allowed for security reasons. This means that I have to get wiring run from



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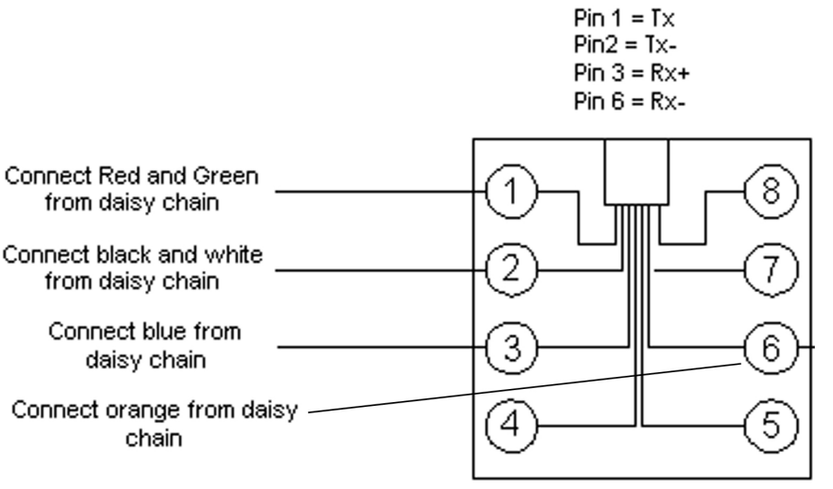
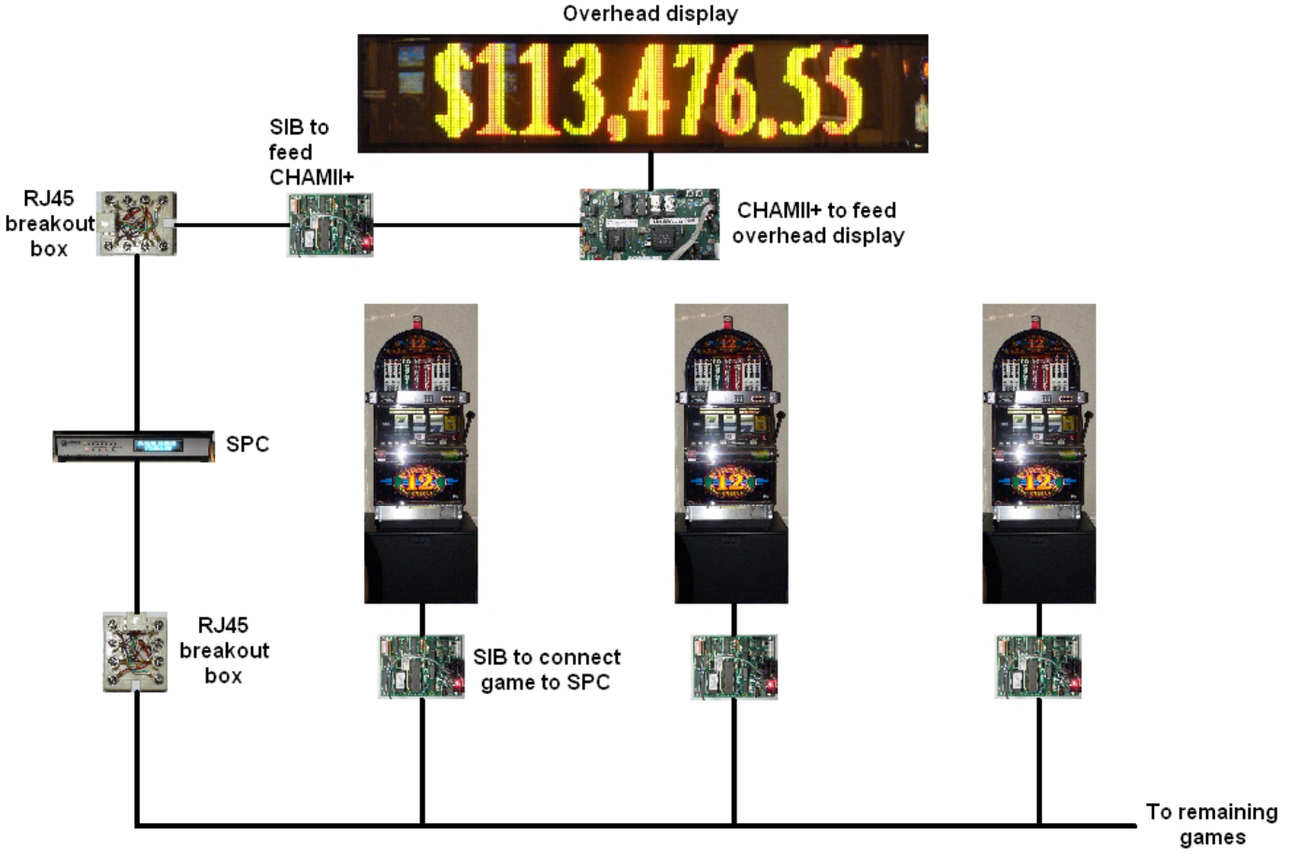
our room to the slot floor to the bank of games. If you recall, the SPC uses RJ45 terminations for its communication lines so we have to get new CAT5E or CAT6 cabling run to each bank that will be connected (our CON2 had the same security precautions but we would go out from our controller on an unshielded 25 pair cable on a BIX block). We prefer to run a shielded CAT6 with a receptacle at the end that I can then plug a standard shielded CAT5E patch cord into (see figure #1). At our system room, we have a patch panel with the same termination in it that I can connect the SPC to. I always get two cables pulled to have a redundancy line in the event that one fails.



Once the wiring is in place we have to concern ourselves with getting everything hooked up and working. I try to do a lot of this before we ever go live (if possible). If you can troubleshoot before your go live date, things go much better and you look much better in the eyes of management for taking the steps to reduce downtime.

If you look at the SIB you no doubt will notice that there is no RJ45 input, so we have to take that and



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somehow connect the daisy chain harness to it. That's where figure #2 comes in. Here you see an RJ45 breakout box that we can terminate the daisy chain harness to. The output of this box will connect to the daisy chain harnesses. The daisy chain will connect to the SIB harness. From the SIB you have a comm harness to connect to the game.

The SIB will connect to the game through the game comm harness. Where it connects is going to depend on the manufacturer of the game. In this instance, we are connecting to the comm board on an IGT S2000.

Now that everything is hooked up for the games (the sign will come later in this article), there are a few game options that are going to have to be set up. Now, I know that this article was supposed to be about replacing your CON2 but since I'm here, I will discuss game setup for a game that hasn't been progressed yet (I have to get to my billion word limit somehow don't I?).

We're going to need a keychip to do this next function (I'm not going into how to access the menus, just what to enable). In the progressive menu, we must enable the style of progressive that is running (Single level SAS, Multi level SAS, link, etc). This is important since the EPROM in that SIB is looking for something specific (I.E. SAS, link etc). I found this out the hard way as I was playing to get this working (embarrassingly enough I had to phone PGI and we all fought to figure out what wasn't working. Sadly it was set to LINK not SAS). While there, you will have to address the game to the correct group for the progressive. This group should match the group setting for that progressive on the SPC (look for an upcoming article on what this means).

After you exit the keychip menu, we have to tell it where to find that new progressive. The game harness from the SIB is connected to the game SECONDARY port on the S2000. To enable this port, you must go to the COMM OPTIONS menu under SAS CONFIG. Here you will find all the settings for the SAS functions that the machine can do (progressive, legacy bonusing etc). There are two channels on the IGT games: primary and secondary. We only run SDS

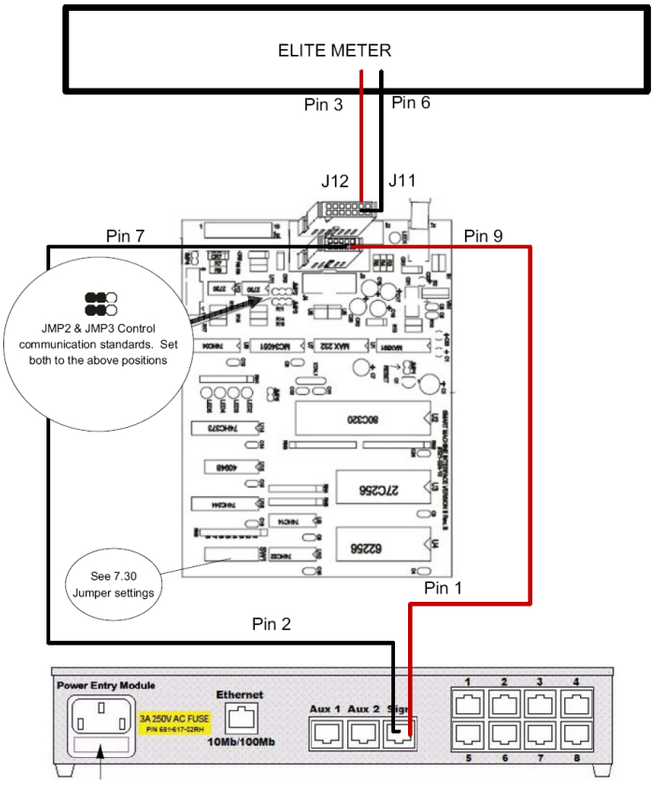
SIB 7.30 ELITE CONFIGURATION

For connecting SPC to older displays and trigger devices.

From the SPC pin 1 (Tx+) connect to SiB Board J3 Pin 9 (Rx+).
From the SPC Pin 2 (Tx-), connect to SIB Board J3, Pin 7 (Rx-)

From SIB Board J2 Pin 12 (TX+), connect to ELITE pin 3 (Rx+)
From the SIB board J2 Pin 11 (Tx-), connect to Elite Pin 6 (Rx-) [CHAM Board Pin 5 (Rx+) and Pin 4 (Rx-)]

DIP switches 1-7 are used for the group to listen for.
DIP switch 8 tells it to output the data as group255 for overhead signs.



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on the primary channel so at our site, we enable the progressive on the secondary channel. Also, you must enter the SAS SECONDARY menu and set the machine address. Each game should be addressed sequentially (to make things easier, it's not necessary though). This gives the address to the SIB so it can come online with the SPC.

Now that the game side is done we can get to the overhead sign. Depending on what technology is used, the SPC may or may not talk to it. If I'm not mistaken, anything from CHAMII+ upwards should be no problem. If you are unsure of whether or not your sign will talk, speak to PGI.

We're going to use the sign output on the SPC to run this progressive display, which means an extra set of wires to get run and to hook up. If you don't wish to do that, all you have to do is hook up the TX+ and TX- from the breakout box from the SPC com port to the SIB for the display and there ya go. Like I said earlier, I will give you a diagram of how it pins out from the sign port, so here it is in figure #4.

I you look closely at figure #4 you will see that the SIB has a set of dipswitches that are used to communicate which progressive group it should be listening for. Figure #5 shows you a map of how those dip switches make that possible. If you look really closely, you should notice that this is actually how to hook up to an Elite meter but fear not! If you read what it says, it also gives you the connections for the CHAMII+ as well.

SIB 7.30 SWITCH SETTINGS

Group Address:

Dip Switches 1-7 control the group. Since there are only 7 available DIP switches, there are only 127 available group address configurations. 0-127 (Note: group 0 is not valid). The configurations are as follows:

SW1	SW2	SW3	SW4	SW5	SW6	SW7	ADDRESS
OFF	OFF	OFF	OFF	OFF	OFF	OFF	0/NOT VALID
ON	OFF	OFF	OFF	OFF	OFF	OFF	1
OFF	ON	OFF	OFF	OFF	OFF	OFF	2
ON	ON	OFF	OFF	OFF	OFF	OFF	3
OFF	OFF	ON	OFF	OFF	OFF	OFF	4
.	.	.	.	.	.	.	
ON	OFF	ON	ON	ON	ON	ON	125
OFF	ON	ON	ON	ON	ON	ON	126
ON	ON	ON	ON	ON	ON	ON	127

ADDRESS REDIRECTION:

DIP switch 8 controls the address redirection. When DIP switch 8 is in the "ON" position, the redirection is turned "ON" and all CHAM II messages will be sent to group (gadr) 255. This means that if the SIB is set to group 7, then all amounts from the Secure Progressive Controller (SPC) on group 7 will be sent as group 255. The configurations are as follows:

SW8	REDIRECT
ON	ON
OFF	OFF

I think that about covers this one folks. More to come later on how to program the SPC and use some of its auditing features.

- Ted Befus
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More on Monitors

SMPS Operation and Troubleshooting

By James Borg

In a previous article about tackling monitor trouble, I covered some points to assist in the location of the area under suspicion. Now let's look at some troubleshooting specifics.

Many have been the cases where a "working" monitor needed to be pulled out of a slot machine to be taken to the workshop for some reason or other. Note that I put "working" in between quotes as if it was working fine in the first place I don't see any real reason to pull it out of the machine. I suppose one purpose for doing this could be because there could be something not quite right with it. It could be showing a faint picture or wide or narrow or lost its sync or is vertically inhibited or anything else that can go wrong with a monitor (the list is endless) but it is, as such working, meaning it has juice, it has high tension building up and it has some sort of picture showing, although not quite what is expected. Faced with a similar situation, the monitor is pulled out and taken to the workshop for further testing. This is where the fun begins.

Applying the correct juice and signal inputs and flicking on the mains ON/OFF switch.... total silence reigns! Erm.... Ooops! Was the mains input actually there? I'm quite sure I plugged that in. Did the power switch suddenly decide to go FUBAR on me? A quick test with a multimeter on Volts AC showed that the juice (220v here in Malta) was being fed to the monitor. Another quick test with the multi-meter on Ohms showed that the mains ON/OFF switch working fine with ZERO ohms when ON and infinite when OFF. The fuse was still in place and didn't decide to vanish or come out of its place on the way. Fuses do have a habit of being a bit lose in their holders and when moving equipment about, they sort of shift slightly and stop making contact properly. Just to make sure, even testing it with a multimeter proved that it was still fine.

So far so good. So what happened? Why isn't it

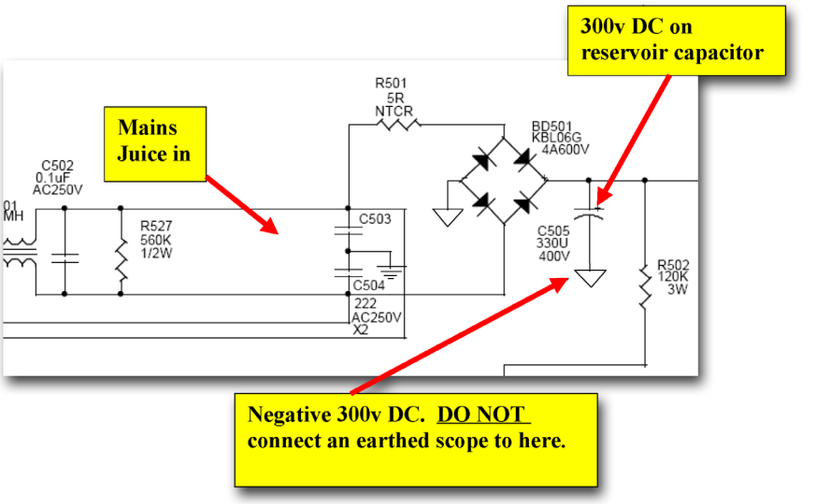


Fig 1: Voltage reading across reservoir capacitor.

coming on? The mind boggles. Where's my favourite monitor noise gone? Was the trip from the slot machine to the workshop that much of a trauma for the monitor to handle? It was only a couple of hundred meters at the most. Did it suffer a heart attack and call it a day? Was it afraid of being touched and poked perhaps? Is it because I pulled it out of its protective shell and it didn't like being exposed to the elements with people looking at it while it was all uncovered? Was it suffering withdrawal symptoms at being taken away from its usual place? Monitors can be quite sensitive and they have feelings. I bet you didn't know that. It certainly wasn't bashed about on the way. Incidentally, monitors don't like being bashed about so don't do that, not on purpose anyway. Many times I wished I had three hands, two for holding such a beast, and the third to open and close doors. Not sure if I would need a fourth hand unless I had an itchy nose at the time of opening and closing the door. However, help is usually at hand in the nick of time, and no, not to scratch my nose.

Thinking aloud about what could have happened. I can to some extent understand the heater element going open circuit while the monitor is being moved about especially if it's just been turned off. When the heater is on, glowing beautifully, it's brittle, VERY brittle. The best way to end up buying a new CRT would be to hit the neck of the tube several times (not hard enough to break it, obviously) and that would be a sure ticket of making the heater stop glowing. The element has just gone open circuit. In other words, you've just killed the tube and no, you won't win a prize. So this is something else you shouldn't do! I always suggest that it's best to leave the monitor off for a short while before moving it about, just long enough for the heater to stop being so brittle.

In our case with the monitor not coming on at all, the heater issue has got absolutely nothing to do with it as the monitor would still come on, the high tension would be heard building up etc (I only mentioned it as a back handed tip in general). The only thing missing would be the picture! Not much good that either come to think of it. Ideally the high tension would be present and the heater would be seen glowing. With those two areas up and running, most of the monitor would be fine–ish. I've been known to eat those words before but very few people know about that so I'm pretty safe.

Coming back to the problem at hand, that's the monitor not showing any signs of life at all. A logical approach would be to go across the reservoir capacitor (also known as the "filter capacitor") with a multi-meter on Volts DC and see if there's any reading across it. There should be something in the order of 300v DC (in our case as we use 220v/50Hz here in Malta). (See Fig. 1)

Caution needs to be exercised working on this type of circuit as the negative of the capacitor isn't at ground potential but at negative 300 v DC which can pack a punch if you're not expecting it. If you don't wish to use a meter to measure what's across this capacitor and would prefer to use an oscilloscope, then make sure that the scope isn't Earthed. If it was, then you'd be sending the negative potential on the capacitor to ground and would set off the circuit breakers and end up in a pitch black workshop, badly wishing you had repaired that emergency light the week before. A good idea once using the scope to measure voltages in this area is not to come into contact with any exposed metal parts on the scope (even the probe itself) as the whole thing is at negative potential. Don't worry a great deal as you'll soon find out what I mean if you don't follow this tip and I'm quite sure you won't do it again in a hurry. You have been warned!

Editor's note: I prefer to use a normally Earthed 'scope and power the monitor with an isolation transformer. Most casinos (here in the USA at least) have a Sencore PR570 isolation transformer on the bench. It's a variable voltage, AC transformer (VARIAC) and isolation transformer in one unit, complete with an adjustable safety trip level for current. It would be crazy to operate a modern slot shop without this unit.

If the expected potential is there, then you can go to the next step and that's checking if the 300v DC is actually arriving on the Drain of the chopper FET. If this potential isn't present, then look for a break in the print between the reservoir and the chopper transformer's pins 1 and 3 (Fig 2). You can easily find a dry joint or a broken track on one of the pins of the transformer, especially if it was bashed about a bit (not on purpose of course). If you're not quite sure there is a dry joint hiding there, still give them a fresh blob of solder as they like that. Doing the same to all the pins on the transformer or board is accessible will probably save you looking for a bad connection in the future. Is that classified as preventive maintenance or having a good foresight? Most likely you've been though it before like I have, so we'll just call it "experience."

When the switched mode power supply section is working properly, the 300v DC on the drain is switched/pulsed at the frequency set by the SMPS chip (in other words it stops being DC and becomes AC). This "PWM Controller" IC is typically synchronised to the horizontal frequency by means of a half-turn loop around the core of the flyback transformer or by tapping into a low-voltage

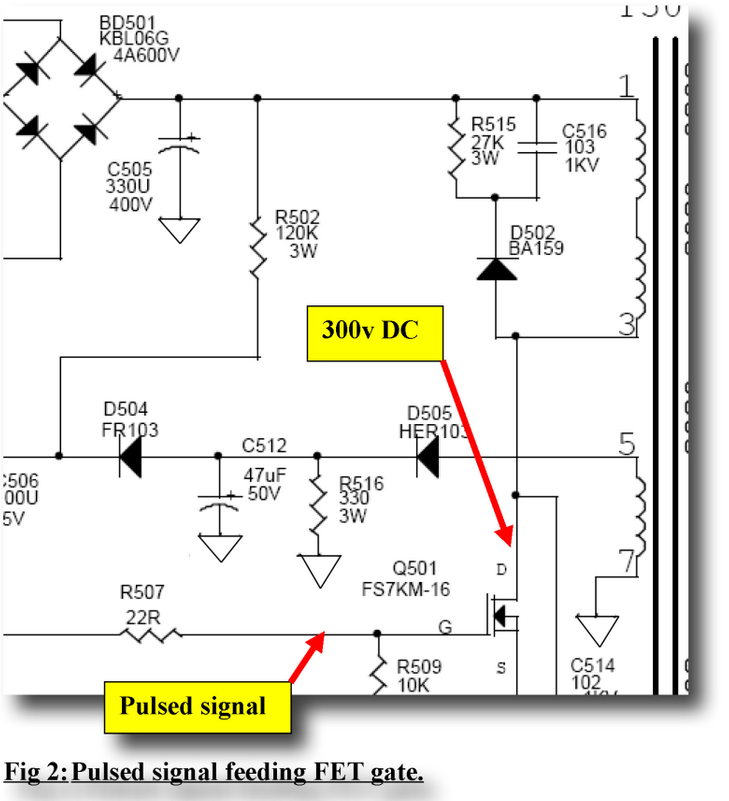


Fig 2: Pulsed signal feeding FET gate.

flyback transformer. Finding the voltage here to be static means that the FET isn't switching hence the supply is for some reason not working. A scope always comes in handy in situations like this as placing the probe on the gate of the FET will show you what kind of feed the transistor is receiving. (Fig 2)

In an ideal world (wishful thinking of course), the feed to the gate should be of a pulsed (square wave) nature in the order of about five volts or so in amplitude. If the signal to the gate is actually pulsed and of the correct level, and the SMPS still doesn't come on, then the chances are that the FET has gone soft. This means that even though the conditions to the transistor are correct, it still won't start to switch on and off. The only way out of this is to replace the component with an identical or better part. The occurrence where this component does in fact go soft isn't all that common. Usually it just shorts creating havoc in the area around it. If havoc was to have a colour, the colour of havoc here usually would be black as the parts around the FET would be cooked good and proper. It's not a very pretty sight I can tell you that for nothing.

If the feed to the gate isn't pulsed, then we have to have a look at the output of the SMPS chip, which in this case is the IP3842N. Even though this chip is small, don't let its size fool you as it does some pretty neat work. See figure 3.

It controls the switching power supply practically from top to bottom. I won't go into any special detail about this component as one can easily download its datasheet from the Net. A good start is to see if there's any voltage reaching its Vcc on pin 7 (Fig 3). This would be between 10 – 16 v DC, always taking the reservoir capacitor's negative side as your reference point. If the result of your tests isn't what is expected, have a look at the high value resistor (R502 - 120K 3W) or resistors feeding the chip on pin 7. There is usually

a high value carbon resistor chain leading to this pin. Some manufacturers prefer to use more than one, others just one. These have a nasty habit of going high in value, and at times even open circuit eventually. The result of which is juice starvation to the little chip which won't be enough to kick start it. The end result being no output to the FET is pumped and the power supply circuit remains practically dead to the world. Not a sign of life anywhere. If the resistor's value is still within tolerance, the required voltage will reach pin 7 of the SMPS chip and the device will start to work with square pulses coming out of pin 6 to the gate of the FET. It's worth mentioning that the supply rail here has to be pretty clean and if any signs of ripple or noise are seen, it would be a good idea to have the 100uf/25v (C506) capacitor replaced.

Once the first pulse reaches the gate of the FET, the drain will go low which will basically energize the chopper transformer between pins 1 and 3. Part of this energy is transferred to the winding between pins 5 and 7 which will in turn send a positive pulse to pin 7 via diodes D504 and D505 respectively. This potential is filtered and kept steady by means of C512 which is a 47u/50v capacitor. It's this voltage through these diodes that keeps the SMPS chip powered up once the initial kick start via R502 has been and gone. In reality, once the chip is working fine and being supplied via the diodes, R502 can be literally pulled out of circuit and it will continue to function normally. It's like the battery in your car. You only need it to start the engine. Once the engine is running, the battery isn't needed at all.

These two diodes are fast recovery rectifiers. Diodes like 1N4007 shouldn't be used even though they can withstand high potentials and currents up to 1 Amp, since their lack of "speed" makes them totally unsuitable and will cause them to heat up after a few moments and get damaged, or worse still, creating havoc around your circuit—yes—coloured BLACK! Ouch!

I think I've covered this type of circuit in some detail and pointed out what can usually go wrong in such situations. Having said that, there are some pretty weird faults out there and I'm sure that I haven't come across all of them so far but tomorrow is another day, a new beginning, a new challenge awaits, a new problem waiting to hit you in the face and make you pull your hair out, all ready and waiting to be tackled and cut down to pieces. Interesting stuff which can never become boring...shocking yes...hair-raising yes...but never boring... till the next time...

- James Borg
jborg@slot-techs.com

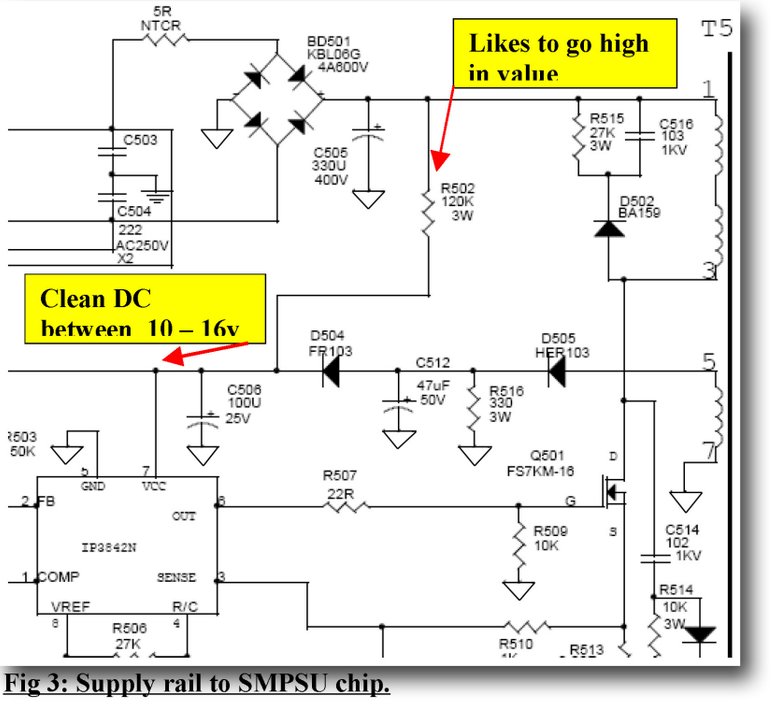


Fig 3: Supply rail to SMPSU chip.

The Great Big Arrow

By Kevin Noble

Aristocrat Video "Host Disabled"

Sometime during the night, the game lost communication with the Mikohn system. It was discovered first thing in the morning when we were completing our rounds of canvassing the gaming floor for changing burnt out lights, BVs off line, and any machine deficiencies that we discovered after the soft drops were done. Today was my day to go with AGCO to seal EPROMS. We were performing an Aristocrat EPROM upgrade when I was approached by another technician regarding another Aristocrat game displaying "Host Disabled" error. He did check the MEAL book and discovered we were having problems with the game not communicating. He stated that the SPC II board was cleared, swapped with another game, and he even checked the options just in case the machine had defaulted. They were all good. He also stated that the SPC II board worked in the other game and not in his and vice versa. When he approached me about this problem and what he did so far to troubleshoot it, I looked at the CPU board that was being sealed by our AGCO officer and all of a sudden the small communication board stuck out like a sore thumb with flashing lights and a great big arrow point-

ing right at it. I asked him if he had reseated this board and he said "no." He took off around the corner and returned about five minutes later with a great big grin on his face and I knew that he got it up and running. I remember having this exact problem years ago with the same symptoms. It was funny how all of a sudden it came back into play after all those years but this time with a big flashing arrow pointing to the problem.

Aristocrat
"Could not clear static Ram after clear"

While in the process of the same upgrade project and during a RAM clear procedure, the machine would not let us clear the static ram by pressing the change button and cash out button at the same time. A RAM clear was performed a couple of times but the same problem continued. We next double-checked the option settings and checked the SPC II board and swapped the board with the game beside it as they both worked great. We next changed the E-square because we were having problems with the games rebooting after the RAM clear. Another Tech discovered when he swapped the E-square from another game, in some cases during this upgrade the game would reboot fine. We changed the E-square in this game but we could not clear the static RAM again. The next step was to change the CPU and begin the RAM clear process again. This time we got to the static RAM clear process and the game allowed us to proceed to complete this project.

Aristocrat
"Host Disabled"

I received a call regarding this "Host Disabled" error message again in the same project upgrade but on a different day. Having to get reacquainted with Aristocrat's software (especially on this upgrade) we cleared the SPCII board and that did not work. Having experiences re-seating the Comm board on the CPU a couple of days earlier, we decided to give it another try but to no avail. Back to swapping parts with another game to troubleshoot the problem. This time, after swapping the SPC II board and clearing it, the board from another game worked and the problem moved. We replaced the bad SCP II board with another and checked out meters and communication closed the door and the game came back on line and passed inspection.

Bally S6000
"Printer not printing"

"Look what you started," said Gary. I checked the MEAL book for the past history of the game to see when the printer starting having problems when I noticed a printer jam that had been repaired by me a while back. It rang a bell regarding what Gary was trying to say. I noticed that a variety of things had been done to this game like replacing SMIB boards, printers, and fiber boards, then swapping fiber lines and printer boards with the game next to it but the problem never moved. The printer will print fine in test mode but not in live game mode. We were asked to break seals on the CPU board and replace the CPU board to solve this problem until we ran into a variety of different twists and turns. I had AGCO come to this game, verify the meters were correct, powered down the game, removed the CPU, and then broke the seals on the game. I placed the CPU back in the compartment with out seating the CPU into the motherboard because I was removing the board in a couple of seconds anyway. With the seals broken, the "Out of Order" card in the window of the game, and the machine powered down I proceeded to the shop, signed out my CPU board and clear chips. Once back at the game I replaced the CPU board and started to do my RAM clear when I noticed no LED on the front of the CPU, a funny static sound coming from the speaker, and the funny noise the Atronic e-motion games (on the next bank over) do when they go on and off line.

"That's certainly not good" I keep saying to myself each and every time I tried unplugging something from the motherboard and powering the game up to see what was bringing the bank down. It finally came down to few items because everything else had been unplugged except for my new CPU board, the motherboard, or the power supply.

The easiest thing was to place the old CPU back in the game (which I did) but the problem still existed. Second easiest was the power supply and to my surprise, the CPU lit up and the Atronic e-motion orchestra band next to me stopped playing. Right then and there Gary and I had this problem licked. We continued to set the options, signed out some bills and wished each other luck as we cashed out and the little piece of paper peeked through the slot and presented itself to us with all the correct information on it.

WMS Video Progressive Link

During the Operating System upgrade, the progressive values on the John Wayne top box would not display. The first game worked without any problems and I must admit this was the first time I had to set the options for this type of set up. I usually have the cheat sheet of options with any footnotes on how to retrieve information or set options to the original from the warehouse. At first I thought it was a problem with the RAM Clear I just performed when I could not set the retrieve the progressive data. I started the process again only to be in the exact position that I previous was in. We tried re-seating the connections on the "Y" cable, rebooting the server underneath in the old drop, re-clearing the game with another set of RAM clears but still the same results. When we closed the door, the game displayed the progressive was not set. We continued to try and get the progressive to retrieve the data but still the same results. We even tried to toggle the retrieve data box on the screen while moving the cable in the "Y" board, and swapping positions on the "Y" cable that was mounted on the bottom of the machine. I had another technician come in and start from scratch to see if I was just overlooking something

that was so simple. Gary went through the exact same steps and procedures that I performed and he was in the same position that I was. We found an unused "Y" board that was in the drop and said "why not?" We replaced the "Y" board, went into Comm Port set up, pushed the retrieved data box and the progressive number began scrolling on the top monitor screen.

Bally S600
Printer Error on CVT report

The afternoon shift technician was called to this machine right after a paper fill for the game going into manual jackpots. Upon arriving for our shift in the morning, this game was passed on to us to troubleshoot. We started by checking with the Mikohn to see if it was communicating and then checked the CVT room by writing a CC Config report when we noticed the "Printer Error" on the report. We next swapped out two printers in the game because the first printer did not work. With the second printer not working and not trusting the spare parts sitting on the shelf, we swapped the printer the game next to it but the problem still existed. We tried to eliminate all the parts without having the seals on the CPU removed by swapping out the fiber board and Slot Machine Interface Board or SMIB in the game but that still did not work. We asked to have the seals removed to perform a clear and replace the CPU board if necessary, but the CPU that we had in stock was bad and it would not let us perform a clear. We cleared the original CPU and that did not work. The CPU's reset light kept blinking on the spare CPU that was in the shop. Reggie suggested swapping out the DUARTS on the boards just to experiment because we did not have any CPUs in the shop. We RAM cleared the board, set the options, inserted bills into the BV and prayed when we pushed the cash out button. To our surprise, a ticket peeked through the slot and extended itself to us. It was a day of troubleshooting, experiments, and learning.

Aristocrat Video
Validation Not Set

I was called to a machine because both tower lights were staying on. This is the indication that the CPU fan is starting to fail and needs to be changed. Throughout the day, we kept checking on the availability of the machine to change out the fan but we could not get on it by the end of the day until the very last minute. When we came in the next day, the Shift Manager informed us that the game was placed out of service because it was not printing tickets but when it cashed out, it was a manual hand pay. I checked the MEAL book on what was done found that afternoon tech tried the SPC clear, swapped out a new SPC board, and tried rebooting the fiber board but the problem continued. I noticed that the monitor displayed validation not set so I decided to start from scratch with the SPC RAM clear that did not do anything. I replaced the SPC board, removed the hopper to check the fiber board, then went into the options and cleared the SPC memory. I next rebooted the SMIB board, SPC board and game all at once and the game started communicating again. The game was working fine into we received another call about an hour later that the game was back to manual jackpots. Chris went to check the problem out and said that he repositioned the hopper away from the fiber board and since then we have not had a call on this machine.

- Kevin Noble
knoble@slot-techs.com

Quick and Simple Repairs #45

By Pat Porath

IGT AVP 2.5 Replacement Printer Bezel

On an IGT AVP 2.5 video slot, such as the "Wheel of Fortune Las Vegas" or "Indiana Jones", there is a printer bezel that was recently released to prevent printer jams. The IGT part number is 58158700. The design is a bit different than the previous ones, and it looks like it should work very well. Our IGT 2.5s didn't have a lot of printer jams when a customer would cash out, only some here and there, nothing major at all.

Speaking of printers and printer jams, we have an IGT slant top "I-game" video slot that has been having jams off and on for quite a while. The printer that is installed in it is a GEN 2 with the metal type bezel on it that is held on with four small screws. After installing the "new type" on the AVP 2.5s and taking notice of the design, I had an idea for the game that has been giving us problems. Crazy as it may seem, I removed the bezel and turned it UPSIDE DOWN. Yes, it did fit (without modifications) upside down onto the printer. Why this specific game had problems, I didn't know but I wanted it fixed. All of the other games in the bank work fine, only the one has paper jams.

The way I tested it to simulate a customer cashing out was pretty easy. I opened the main slot door and pressed the diagnostic button to get it ready to print a demo ticket. Next, I removed the "hopper door" and closed the main door. Otherwise if you close the main door to have a demo ticket print out of the game, it will go back into play mode. With the hopper door removed, you still have a "door open M" so the game stays in diagnostic mode with the main door closed.

Now that the metal printer bezel (which is screwed directly to the printer itself) is turned upside down and the main door is closed to have the printer and the machine printer bezel lined up, we can test it out. Just like a customer is sitting at the game with the main door locked up, I started printing demo tickets. One after the other printed without any problems. Did this "cure" the machine? I'm hoping so. One of the main reasons for trying something different with it, is because nothing else seemed to work. I made sure that the complete printer assembly was locked into place and I made sure that the "exterior printer bezel" was the newer type. They have a clear plastic piece inside of them that

help the paper move easily through it. The old type does not have the clear plastic piece in it. Some of them work fair, and others will jam up. So far so good with the repair. I haven't heard of any complaints yet.

A note about feeding paper into the printer: I have found that a few of the games in the bank had the paper fed incorrectly. You may ask, how can that be? Well, on a few, the paper was fed UNDER the metal paper tray frame. On the top part of it there is a curved piece of metal. The paper is supposed to go OVER it then be fed into the printer. I started to get the word out at the casino I work at so they are fed properly (This only applies to the GEN 2 Universal that has the large metal paper tray with the specific curved metal on it.).

Aristocrat Gen 7 Viridian Battery Low Error

While making the rounds on the gaming floor, I came upon an Aristocrat Viridian Gen 7 that had a "battery low" error displayed on the screen. Battery low? How in the world could that be? The game is less that six months old, is it even possible? Instead of removing the main processor board and testing the batteries with a meter, I thought why not try to a reboot of the game first? The reboot was done and the game was fine. I waited for a couple of minutes just to make sure, and everything was OK. No errors. I didn't hear of any complaints from the game since. In this particular case, a simple reboot of the game seemed to have done the trick.

Atronic e-motion Conversion With Old Main Boards

We recently converted 24 of our e-motion games and what a project. What ever happened to the days of replacing three reel strips, three pieces of glass and two chips? I asked a co-worker just for fun and he said, "Those days are long gone."

Editor's note: And I say that if you're looking backward at easy conversions, you should look forward to even easier conversions as server-based gaming becomes a reality and machine conversion is just a mouse click away. Good for the operator and manufacturer, not so good for gaming's technical community in terms of job security. – ed.

Here is what the kit included: An additional cooling fan, a cooling fan shroud, a "piggy back board" (to go on the main processor board), a dongle chip, a new piece of top glass, a replacement motherboard, new light bulbs (yes, even new light bulbs) and of course the program chips themselves. Each game included a total of six. Don't get me wrong, I like the e-motion games and our customers like them too. They run very well and are durable. As for the conversion, it wasn't difficult, only time consuming. It took me about an hour and a half to do one game. But what is the company supposed to do? With more graphics, more bonuses, and proper game communication with the tracking system a must, the parts need to be replaced to keep up with the times.

Here is where the problem came into play. When a coworker started to turn the games on and set the game options, we had issues. The first three games would not even boot up properly, so a fourth game was turned on and checked out. That game ended up with a dongle error. I was asked to troubleshoot the three to see if I

could get any of them running and ready to option. I tried everything I could think of and nothing worked. Some of the things I tried were: swapping main processor boards, swapping video cards, a RAM clear, a different power supply, and switching the top LCD contion with the bottom. Nothing at all worked. Three hours later, a phone call was made because none of this was making any logical sense. We have done Atronic e-motion conversions before; this wasn't our first time. So, what was the major problem? Why wouldn't these games work properly? Come to find out we needed a "version F" main processor board. Ok, what version are the ones that we are working on? They were "version E" boards! I could have been there for days and wouldn't have gotten the games running! What about a different bank of games that were being converted, what version do they have? They already had the correct ones in them. I don't really know how we had different ones but it remained that we did. If we had started on the back part of the gaming floor, the games would have worked properly, and we would have known that it had to be something original with the game that prevented it from working properly. So replacement boards were ordered. At least we could get some of the games running that day. In conclusion, if there are major problems with "e-motion" conversions, check to see that the main processor is the correct version. There is a small white sticker located in the middle of the board that indicates the version.

Bally 6000 ticket printer problem

Recently we had a Bally 6000 that was locking up for handpays. It didn't matter what amount the customer cashed out, it would be a handpay. The game had paper and it was communicating with the Oasis System. I knew that it was communicating because of a quick check of a main door OPEN and CLOSED that showed on the Oasis System display.

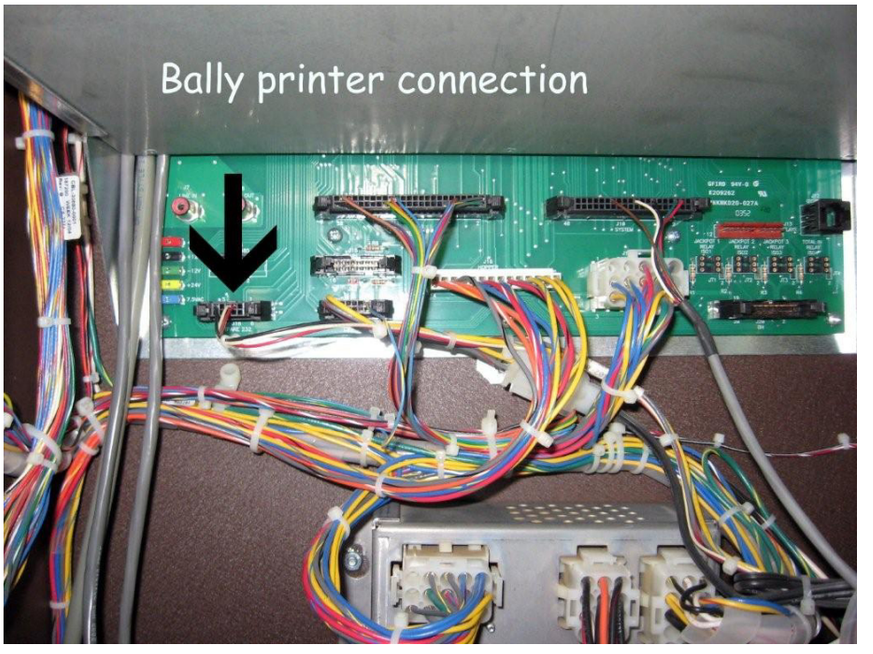
So, what was going on? Maybe a game option wasn't set correctly? A replacement processor board was just installed and still it wouldn't print a ticket. I checked game options and one wasn't correct. A Full RAM Clear needed to be done so the option could be set. If I recall correctly, it was option "50 LO" which is the lower game I.D. numbers, which was at zero. A RAM clear was completed, and the option was set the same as the game next to it. Time to see if it would print a "demo ticket" yet again. Once more, it didn't do anything, it just sat there. To print a "demo ticket" simply use test number four. Press the "test button" until "4" is shown on the game display (the same test as a hopper test). The display will also show "coup" which stands for "coupon" a.k.a. "voucher" or "ticket." Press the spin button, which should be lit up, and it is SUPPOSED to print a ticket.

Next, the main processor board was removed to compare the DIP switches and the jumper settings. One of the DIP switches was set differently on the problem game compared to a known working game. On a Bally 6000, a Full or Complete RAM clear procedure has do be done so the new DIP switch setting will be recognized so another RAM clear and option was done. Once again, it did not print a demo ticket. I compared the DIP switches to the game to the left and they were different too. So the procedure was done again only with the same darn result. I even had the printed "Full RAM Clear" procedure, right from Bally, followed it word for word and nothing. I even checked the "Oasis Global Settings" and they were all OK too.

What to do next? I swapped the printer and the COM board (a.k.a. power board) with the game next door because I knew that they were good. The game STILL would not print a demo ticket. It would feed a blank ticket and even print a self test ticket but not a demo ticket. It started to look like the problem was something with the game, not the printer itself. To verify, I swapped the main processor with the game next door and STILL a demo ticket would not print. What in the world was left? The main processor, printer and COM board were all swapped. The game definitely was communicating with the system because I checked the Oasis System Diagnostic Monitor and looked under transactions. Nothing unusual was there either. I was hoping to see a "printer not communicating" error or maybe a "Sentinal communication error" but no.

I had already checked most of the connections to see if any were loose on the printer itself and on the game's backplane board. Why not check again? I removed the processor board and the reels to get them out of the way and started checking wiring and connections more closely this time. So far so good, nothing out of the ordinary and nothing loose. Next, I traced the wire harness from the back of the printer COM board to see where it went. The power cable went to a power source and...WHAT IN THE WORLD? THE PRINTER COM CABLE IS LYING ON THE BOTTOM OF THE MACHINE! The other end of it, which is SUPPOSED to be plugged into the backplane wasn't even plugged in at all! How did this happen? I spent hours trying to repair the printer problem and the COM cable wasn't even plugged in. What was up with that? I could hardly believe my own eyes. The game was powered down and I plugged in the cable, double checked with the game next door to make sure it went into the correct socket and turned the game back on. Game options were re-checked and one wasn't correct so ANOTHER RAM clear was done and FINALLY it was time for testing. With test number four, I carefully pressed the spin button and stared at the ticket printer.

"Please print me a "demo ticket" I asked. In a few seconds it printed one. FINALLY! Victory Was Mine! Next, I closed the slot door and tried some "promotional cash." I downloaded $20.00 and tried my luck. After a little bit, I hit $10.00 and pressed the cashout button. YES! It printed a ticket instead of locking up for a handpay. Finally the game is working like it is supposed to. I inserted it and pressed the cashout button once again. YES. Two for two, the



game is definitely working properly. I only wish I knew exactly how it got unplugged. The game was recently moved, so it may have been from that but I'm not sure. All I cared about was that the game is working properly.

Editor's Note: More of a question really, Pat. Knowing now that this is a possibility, will you change your troubleshooting tactics in the future? How difficult is it to examine all the connectors?

Aristocrat Viridian Bill Acceptor Door Switch

I received a call that the game wouldn't show a "bill door closed" so I did the usual things: reseated the stacker box, opened and closed the bill door a few times and closed the main slot door. This time it didn't help. Reseating and opening and re-closing didn't work.

I wasn't even sure where the bill door switch was located as I had never encountered that problem with a Viridian. Located under the stacker box door and frame, on the right hand side, was the switch. It actuates when the door is closed; part of the door frame presses on the switch. When opened, the door frame is lifted off of the switch and the machine shows "bill door open." I checked it out and thought that if I ever-so-slightly bent the door frame inward so it will push on the switch a little bit better, maybe it would work. So VERY carefully I bent it inward just a little bit (I wouldn't even say 1/8th inch) to see if it would work and it did. The bill door showed closed. I opened and closed it a few times just to make sure and it worked great.

IGT S2000 Stacker Door Switch Problem, a.k.a. "Door Open B"

I was asked to look at an S2000 that wouldn't show a bill acceptor door closed. I grabbed a spare microswitch but no luck. The "door open B" remained on the display. The male connectors were a bit loose on the pins so I used my pliers to gently press them down a bit so they would fit better. That wasn't the problem either. If it isn't the switch or the connection, maybe it is a problem with the wires? While checking out the plastic protection that was over the two wires needed for the switch to work I noticed something. Was that electrical tape that I saw? It sure looked like it. I took off part of the "plastic wire protector" to expose the repair and there the problem was. A wire had come disconnected, no wonder it didn't show closed. The wire was repaired and the plastic was put back on. I closed the bill acceptor door and then the main door. Now it showed closed. I opened it again just to make sure that it was working properly, and it was. Another game back online.

Epic 950 Printer Open Problem

I received a call that a printer had an error on a Bally Cinevision. The printer that was in it was an Epic 950. Thus far we haven't had any major problems with them at all that I know of. When I peered into the game and saw that it was a 950, I wasn't exactly sure where to start. I don't have any repair experience with these at all. I have read about them, but no hands on experience yet.

On the side of the printer, a couple of LEDs were lit up. One of them is labeled "paper" and the other "open". I knew that it thought it was out of paper because it wasn't fed into the printer head, but the "open" status, I wasn't quite sure. What did it think was open? I reseated the complete printer assembly and nothing happened. I also opened and closed the printer head a few times but nothing happened there either. I authorized a payout to be completed so the customer could get paid out and looked more closely at the problem. Usually with ticket printers there is a print head OPEN and CLOSED switch and a "printer assembly" OPEN and CLOSED switch. It may be a switch or it may be an optic; it depends on the manufacturer of the unit. So, I took a look at the back part of the unit which slides up to the "COM" or "power" board but I didn't see anything unusual there. Next I took a peek at the printer head area and noticed a small microswitch on the left hand side. When the head is closed, it pushes on the switch and the unit knows that it is closed. I used my small flat tip screwdriver and pressed on it and right away the "open" LED went off, meaning that it indeed showed that the print head showed CLOSED. I carefully bent the metal part of the micro switch so that when the plastic "striker" part of the head pressed on it, it would work. I closed the printer head and the LED did go off. The paper was fed, and it started to feed right away. It wouldn't feed at all before because it thought that the head was in an OPEN state. When I closed the slot machine door, the game printed out the 400 credits like it was supposed to. This was the first time that I had any major problems with an Epic 950. The particular printer has been on the floor for around a year. I don't know exactly what caused the switch problem. Maybe the print head was slammed closed? It's hard to say. The main thing is that the problem was found and resolved in a timely manner.

TRM Not Accepting $10.00 Bills

Well, first of all what is a TRM? That is was we call our "Ticket Redemption Machines" at the casino where I work. I was asked to look at a JCM WBA 13 bill acceptor on one. The complaint was that the machine wouldn't accept $10.00 bills, so I helped the cashier cage supervisor remove the unit out of the machine (the cashier cage oversees the TRMs) and I took it to the shop for a once over.

The bill acceptor was set on the bill acceptor bench and it was time to check it out. I first opened the transport assembly part and didn't notice anything unusual. After that I opened up the bill acceptor head. Ah ha! Here is more than likely the problem. At a training class, I was told the majority of problems (not all) were dirt, grime. The head did in fact have dust and grime in it. What we usually do is take a cordless Dremel with a small nylon wheel on it and clean off all of the rollers. You have to be very careful when doing this because if not, you could damage an optic if it is touched with the wheel while it is spinning. Next, the bill acceptor is blown out with compressed air. After that, the optics and magnetic head are examined and wiped off.

Now it is ready for calibration. DIP switches 5, 6, 7, and 8 are turned on and power is applied. The unit will "cycle" for a moment, and then the black and white calibration paper can be inserted black side first. The paper will go into and out of the unit quite a few times, and then it will fully reject it. Next, power needs to be removed and DIP switches 1, 2, 3, and 8 need to be turned on. Power up the unit and turn DIP number 8 off. The bill acceptor should "cycle" like it would in a game and accept a bill. Once I cleaned, calibrated, and tested it on the bench, I was quite sure that it would run fine in the TRM.

NOTE: The cleaning and calibrating technique that I personally use may differ from the one that you use. If they are really bad I will use a mild dish soap solution on a damp rag, then wipe out the inside of the bill acceptor head after it is blown out with compressed air.

- Pat Porath
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One Week Intermediate Level Class	Power Supplies	CRT Monitors	LCD Monitors	Hands-On Repair Lab CRT Monitors, LCD Monitors, Power Supplies, etc.		
One Week Intermediate Level Class	Power Supplies	CRT Monitors	LCD Monitors Hands-On Repair Lab CRT Monitors, LCD Monitors, Power Supplies, etc.		JCM or FutureLogic or Ithaca or MEI	
Another One Week Alternative Class	LCD Monitors	Slot Ticket Printers	JCM UBA Bill Acceptor	OASIS Training		
One Week Class	OASIS Training		JCM UBA Training	FutureLogic Ticket Printers	3M Touch Systems	
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Four Day Class	Power Supplies	CRT Monitors	LCD Monitors	3M Touch Systems		

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Touch Screens	■				
Power Supply		■			
CRT Monitor		■			
FutureLogic Printer		■			
Transact Printer		■			
JCM UBA		■			
OASIS Hardware			■		
Digital Electronics			■		
Basic Electronics				■	
Hands-on Repair Lab	■	■	■	■	■

Contact us. Slot Tech Magazine 1944 Falmouth Dr. El Cajon, CA 92020
tel.619.593.6131 fax.619.593.6132 e-mail editor@slot-techs.com

TechFest 18

TechFest 18 was held October 21-23 2008 at the Sahara Hotel and Casino in Las Vegas, Nevada. With 17 previous events under our belt, the TechFest team of presenters representing 3M Touch Systems, MEI, FutureLogic, JCM, Transact Technologie, Sencore, CI Innovations and Ceronix all presented their usual, outstanding seminars. Thanks, gentlemen. I've run their pictures twice a year since 2001. I'm not going to do it again this issue. You all know what these guys look like.

Sadly, I must close this issue (and the year 2008) on a sad note and report the untimely (shocking, really) death of one of the stars of TechFest 18, John Szewczyk. Reports indicate that he was having chest pain while in Vegas but refused to get any medical help. He died the next day at his home in Oregon. He was a really funny guy. Damn that sucks.-rf

RIP John Szewczyk

Thirty-year vet Chief Petty Officer and a Slot Technician John Szewczyk died suddenly of a heart attack in his home Friday, Oct. 24, 2008.

John was one of the students who attended TechFest 18 in Las Vegas recently. John worked at Chinook Winds Casino in Lincoln City Oregon as a Slot Technician.

John is survived by his wife of 26 years, Christy Szewczyk of Lincoln City, daughters Erica Johnson of Salem and Randi Szewczyk of Lincoln City, his son Timothy Johnson of Salem, granddaughter Kristiana Johnson of Eugene and his grandson Kealon Buchwald.

John was a loving and tender husband, father and grandfather and a friend to many. He enjoyed spending his free time with his family and working on computers. John loved being a Slot Technician and enjoyed sharing his skills with other technicians. He always made his friends smile and he will be deeply missed by all who knew this wonderful man.

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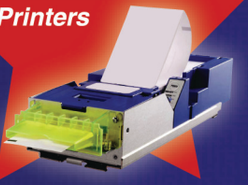

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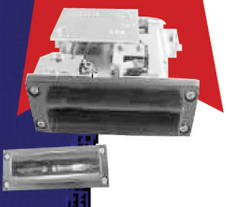

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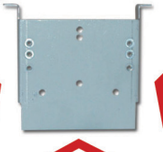

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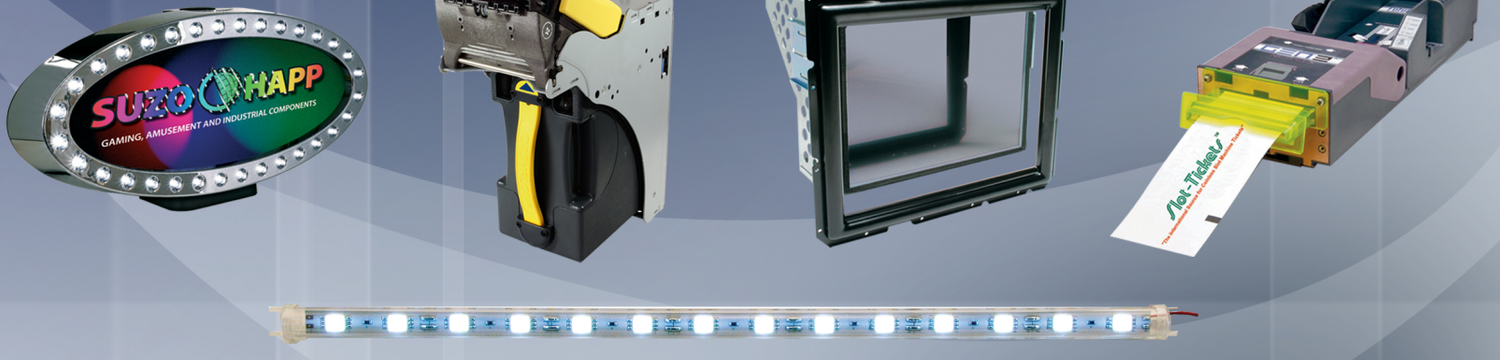

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